

Drine Park
Laguna plain. *Alfalfa*
Dul Park
muscatine

Si + 627
barge 25/11
9 na
Chatham
Mittler
woodline
939
erescend

This book belongs to
B. Shimek
Iowa City, Ia.
It can be of no
possible use to you
but he wants it, and
will reward you
suitably if you return
it.

Mr. West
Barnes
Iowa City
Iowa

1
Aug. 21, 1909

Left Orleans at 6 AM.
for Hilley.

Spent night at Windsor
Hotel.

Aug. 22

Left by way of the Omaha
(C.M.R.) at 4:33 AM.
Stopped at Sioux City for
breakfast, and reached
Minim Valley at about
10 AM.

Rained some. Stopped at
The Miller.

After dinner drove out
to Cox, and took home.
Mr. Peter Cox also has
fine material with, which
I will get later.

Visited at Cox, + then drove
to ridge No. of Maxim Valley +
collected plants on S. side

and at str. 1.

Met a couple of young men,
student of Ohio State U.,
who are in quarters singing
at Chautauque.

They commenced air their
views on the geological
formations, and I guess
they were a little
surprised to find that the
shabby fellow they encountered
knew anything about it.
Received my suitcase at
9:20, & left for Cedar
Rapids at 10:30 PM.

Aug. 23

Arrived at Cedar Rapids
at 5:25 AM & left
for Iowa City at 6 AM

Aug. 25-1909 (Wed)

Left Iowa City at 9:30

Arr. & Cedar Rapids at 11:35 AM

Aug. 26 1909 (Th)

Reached Mo. Valley at
6:15 AM. Took my basket
for breakfast.

Left for Logan at 8:35 AM
with Mr. Fr. Peckenpaugh.

Went to his pit. He has
exposed 9-12 ft. of
sand, varying in color
from brown, & with iron
bands & streaks.

Below this is a layer of
bluish silt, up to 1 foot
thick & below the gravel.
In this he found near
its upper part, a dip
of a few degrees from

of ribs. The ship
is probably from pachyderm
but ribs are too small
for that.
We dug into gravel, &
found it only about a
foot thick. It rests on
Mississippian limestone.
The light blue silt rests
right on gravel.
This is all typical
of the formation.

Elephas columbi

9 plates in 3.84 in. from
center of ridge to center
thickness (or width)
2.86 in.

6.9 in
6.8 in

Side view

This tooth was found in gravel
layer in quarry opp. Logan
by Mr. Lester Adams, when
Illinois Central was being built.
A fragment of bone, - probably
part of scapula, - evidently of
a pachyderm, was found
with the above. It is flat
on round surface, & probably
not a leg bone.



Large fossil, presumably from
upper, not much worn or
crushed - Measured 5 inches,
center to center - 2.26 in.
This is whiter than other
fossils - more like ivory

This may be *E. imperator*
Belongs to Thos. M. Adams.

Mr. G. H. ... (W. J. Logan)
Mr. Adams - Hay creek
Upper part in G. H. ...
This runs about 8-12 ft
Its lower part is dark
(black mud) in places, &
again lighter with iron
tubes in lower 6 ft.

In places, there are streaks
& bands of gravel, etc.
In this zone we often
find

cracks as 12-24 ft wide
Murchy, etc., all
filled with brown
or black

Many shales in
alluvial mud (see
spec.)

There are irregular lime
nodules.

The upper part is again
less sandy & mostly lighter
though there are streaks
of red (iron), dark, etc.
Some bones of birds &
etc - lying on bank
in some places - again
nearly at bottom.

This is Hog creek.
In several places this
creek has cut into a
deposit leaving terraces.



after over and wide,
the creek had filled up

to new terrace level.

Left at 10:30 pm. for McHale

Aug. 27th (Fri.)

Drove out to Main bridge
with Mr. Sniff.

Took photos & collected
plants on sand dunes.
A hot dry wind.

Pacheco left at about
midnight for Cedar Rapids.
Aug. 28th (Sat.)
Stopped at home, visited
Mother at Hamilton, &
left Cedar Rapids at
10³⁰ PM. for Chicago.

1909.

11

Aug. 29 (Sun.)

Reached Chicago at 6.²⁵ AM
& left for Milwaukee at
8 AM. Reached Me. at 11 AM.
Went to Chas. J. Harris for dinner.
Spoke in afternoon. Given
dropping of religious etc.
controversies, & was warmly
received.

Left at 10.³⁰ PM. for Chicago
by way of C.M.W.

Reached Chicago at 11.⁴⁵ PM.
& put up at the Coy. Hotel.

1909

Aug. 30 (Mon)

Left at 6:45 for Dune
Park, Ind.

collected plants in sand near

water:

Euphorbia
Solidago racemosa
Achillea
Cerastium
Panicum "Licht"
" "

Oenothera biennis
Rhus glabra
Eragrostis canadensis
Solidago canadensis
Hypericum punctatum

Cyclopogon
Polygonum
Euphorbia corollata

Monarda fistulosa
Rhus glabra

Aster
Cnicus

Lespedeza capitata
Cyperus

Poa
Panicum

Euphorbia (flat)

Polygonum

Rhus glabra

Zephraea ?

Helianthus

Carex

Panicum

Scrophularia

Asclepias

Lithospermum

Ambrosia

Elymus

Crataegus

Poa

Erigeron

Asclepias

Amelanchier

Elymus

Phlox

Asclepias
Asclepias
Asclepias

50 *Pedicularis*
Pedicularis
Aster

Aster

Aster

Aster

Aster

Aster

Aster

Aster

Aster

Aster

Aster

Aster

Aster

Aster

Aster

Aster

Aster

Aster

Aster

Aster

Aster

Poa
Poa
Poa

Poa

Poa

Poa

Poa

Poa

Poa

Poa

Poa

Poa

Poa

Poa

Poa

Poa

Poa

Poa

Poa

Poa

Poa

Poa

Poa

Poa

Poa

Poa

The dominant species on
some parts of dune is the
coarse big grass with hairy
sheaths, *Stenotaphrum*

No 1 - Sand dune with dead trees (pines)
 28, 30 - " " " " " "
 33, 34 - " " " " " "
 41, 42 - Dune - Timberline etc. in distance
 25, 26 - Nymphs - fast above water
 31, 32 - Wild grape crawling on
 15 - *Asclepias*, *Piper*, *galea*, *Rosa*, *Rod. cedron*, *Pellaea*,
Quercus, *Salix*, *Juniper*, *Pinus*, *W. oak*,
 16 - Dune - Grape & *Quercus velutina*
 11, 12 - Sand dunes - Grape,
 9, 10 - " " - *Asclepias* & *Salix*
 10 - " " " " " "
 7, 8 - *Asclepias*, dead pines, dunes.
 3, 5 - " " " " " "
 6 - Dead pines
 3 - ~~Asclepias~~ it along shore from dune
 4 - " " " " " "
 1 - *Asclepias* clump - 1 *Salix* (poor)
 7 - *Asclepias* in fruit
 m. ~~Asclepias~~ up shore
 m. ~~Asclepias~~ across lake
 21, 22 - *Asclepias* *Asclepias*
 19 - across wooded valley
 20 - " " " " " "

Shin Tanager

Left Chicago at 10 Pm.

Copied

1909

17

Aug. 31 (Tue.)

Reached Iowa City at 4:30 am.
No back, - R. Kessing helped
carry my trunk to morning.
Left at 6:30 am. for Napp.
without having been able to
get the folds at home, - had
to unload silver, fix
plants & such.

Reached Napp at
2 PM.

Went out to sample E. of
Lime creek.

But Winter pit -

Drank well about 10+ ft
below water - & sand & gravel
all the way - N. of RR.
Geo. Grady has pit S. of
track.

S. of track & E. all cement
Hawkeye Cement & Lumber Co. (Hawkeye)

In the Winter pit last
winter a bone was found -
21 in long, & 2 in diam.

A man (American?) has been found
in Gabriel's pit.

The Winter pit faces
S. & S.E. and is
about 12 ft of
beautifully cross-bedded
sand & fine gravelly
with occasionally bands
and lenses of heavy
silt - rather dark.

The fine sand chiefly
contains pieces of
Micromys bones (etc.)

I found a bone in
sand & one in silt
Some are broken, but
most entire. I found
these shells mostly at

about 6 ft. above base.
The surface of bank is
from water in pit.

Toward E. side I could see
top of dune. This is heavy,
sandy silt, more or less rusty,
especially where it joins
gravel & sand. There

is little better soil than
this upper layer is 2-3 ft.

The top of sand is just
about on level with
the N. & S. R.R. to the
south.

The winter pit is just N. of
R.R. & 12 or 15 rods N. of
wagon road, & half a
dozen rods to one
mile from along R.R.

It is probably 150 ft long.
These pits are not on
general plain.

Left at 6:05 PM with
Joe for Clear Lake, to
meet Anne & Frank.

Spent night in cottage

Sept. 1 - Wed. 1909

A cloudy, disagreeable
day. Collected the oak
acorns & took photos
of beach & Lake (photos
1 & 2).

In afternoon went
across Lake to W. end
with Hylk Shepherd in
Mark White's launch
"Hobo" to inspect
water plants in
vicinity of Clear Lake
Game & Protection area.

Found the most
common of all to be
Myriophyllum.

Most common plants in
vicinity of Lake:
Myriophyllum (Ludwigia)
Scirpus americanus

Eleocharis
Myriophyllum (Ludwigia)

Returned at nearly dark
& retired.

I was downright sick
with malarial fever, etc.
and had a bad night of
it.

Harry Montgomery & Lil
occupies cottage next to
Joe's. Saw Alice Yeoman.

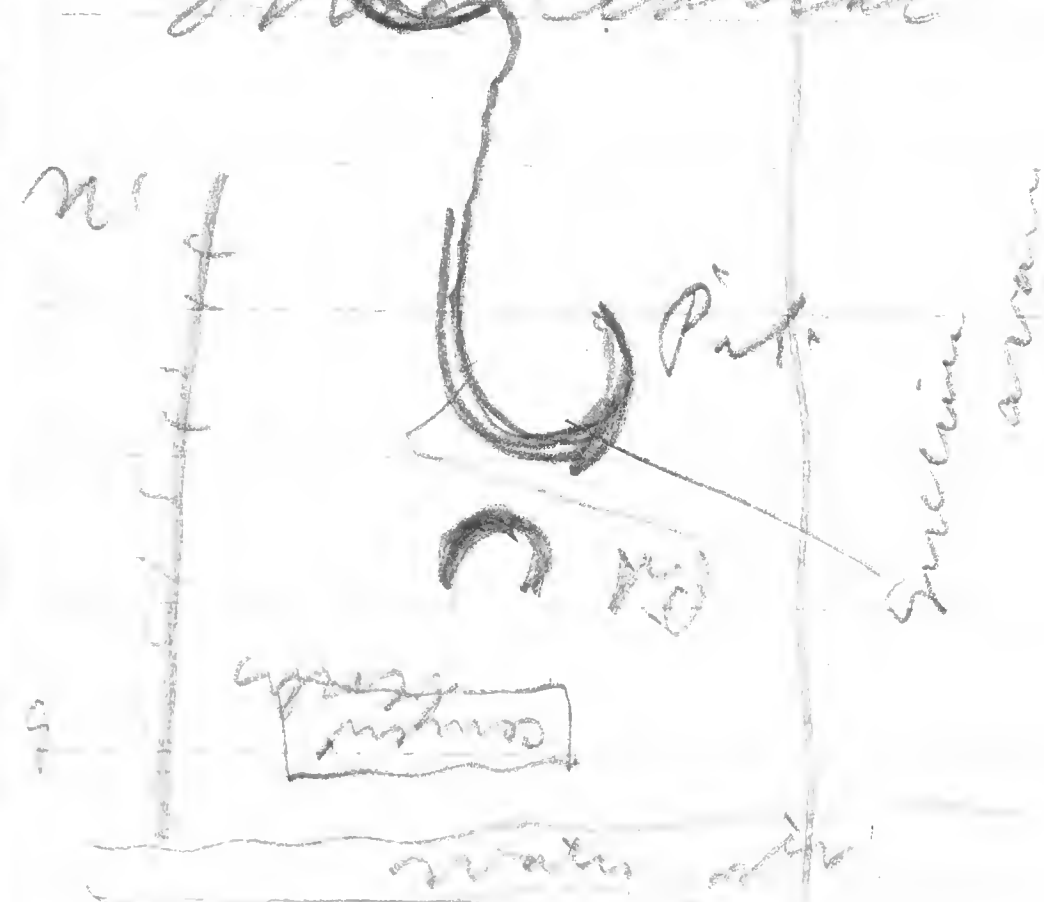
Sep. 2-1909 (Thu.)

Left with Anna & Frank
for Mann Co. It was
raining & disagreeable
at 1:45 Anna & Frank
left for home, & I
returned & stayed in
sheds at Mrs.
Rainer's all day,
and I was still all
in.

23

Sep. 3-1909

Visited the Catlin sand pit
N. of Water street & just E. of
the Central R.R. track.



The 8 mile pit is smaller &
not now in use. It is here
that part of Macdonald's
with 3 or 4 teeth was found
about 20 yrs. ago. It
was sent to Historical Room
at Des Moines (sent by
H. Smith.)

The 8 mile pit shows about
25 ft of gravel & sand,
mostly gravel. Some cross

bedding is visible but
it is not as clean as
in Winger pit.

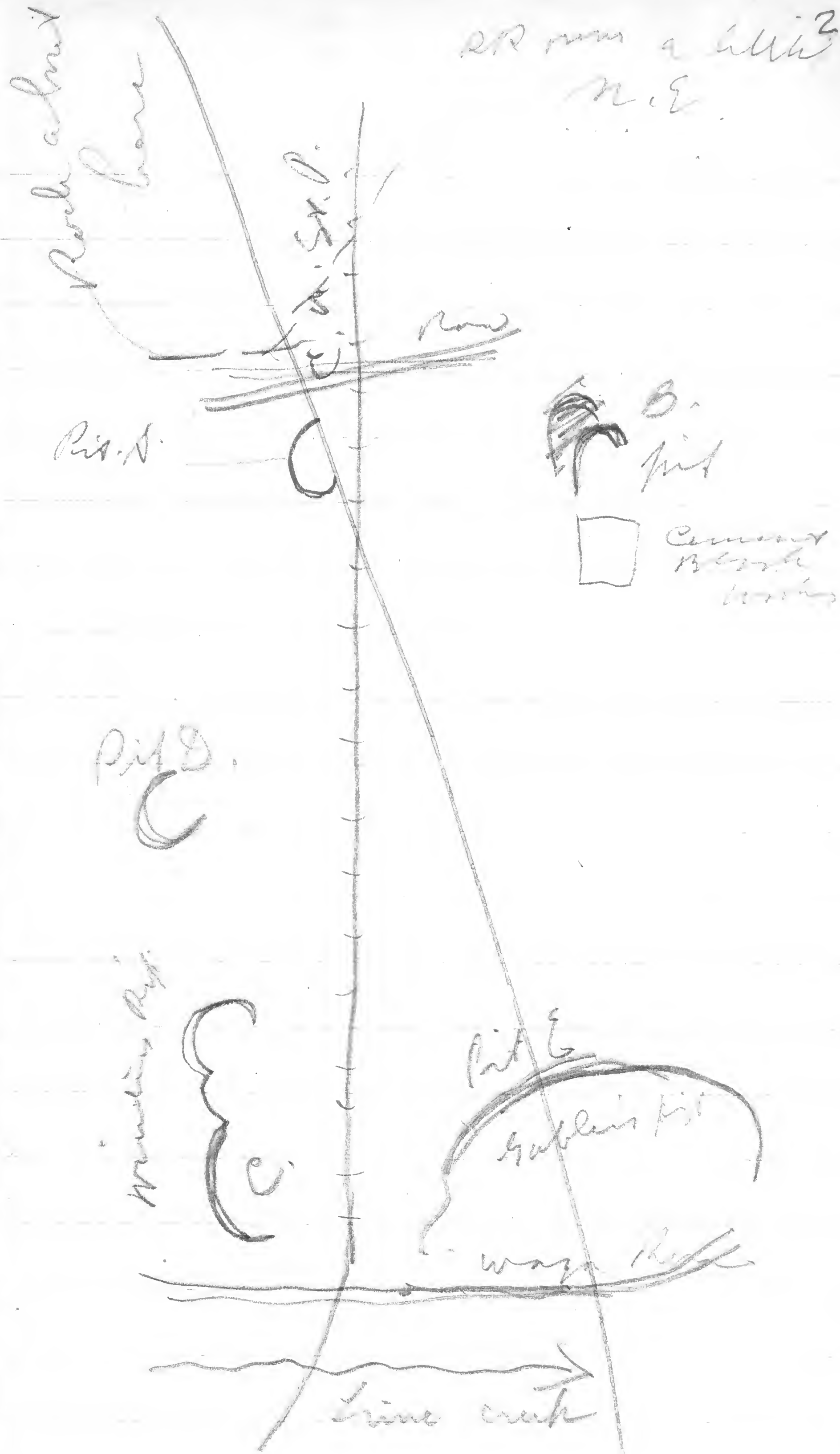
Found *Prunella* areas in
the north, just in line
gravel - 7 specimens.

These pits are on a bench
nearly on a level with general
prairie + the Pine creek
alluvial valley is only
2 or 3 rods to the east.
The N. part of the
N. pit shows bands of
silt + otherwise mostly
fine gravel.
It shows upward 15
mils, no det. silt lenses.

fine gravel

1. The shades of brown and
red, and the white lines.

200 mm a little ²⁵
N.E



Pit A. shown 6-7 ft.
 5-6 ft coarse gravel
 & small boulders
 above, not clearly
 cross-bedded, &
 below that, sharply
 defined, 1-3 ft of
 fine sand, more or
 less cross-bedded.

Visited the Huffman
 pit - B.

It is 12-14 ft. to rock, &
 all sand or gravel.

The upper layer, 2-4 ft
 is again coarse gravel
 packed in. Below
 is sand, cross-bedded
 with streaks of fine
 gravel.

Rock splinter in (3/4 mi. +
 N. - N.E.)

Water appears everywhere
 in lower part - in this
 pit say - 6 or 8 ft. at top

Pit C
 At winter's pit noticed
 bands with MnO₂. There
 seems to be no coarse gravel
 on top here.

Photo 6 - S. pit - looking W

" 14 - same.

The central black band is
 MnO₂

Photo I - taken a little further
 N. shows layers of sand
 & cross-bedding.

Photo 15 - same.

Photo 16 - Looking at pit
 from N.W. shows sand

Pit E.

Gabler's pit is located E of RR & N of road.

Photo 19 shows a N.E. view of pit from road.

The Gabler pit shows cross-bedding, & uppermost part is somewhat more

gravelly, but less

humorous than in

Huffman pit (B).

There are MnO₂ bands

in the Gabler pit.

Photo 20 shows part

of Gabler pit - cross-bedding,

MnO₂ layers, etc.

Found one more in

fine gravel in bottom

of pit - a bone in

bottom of Gabler pit

which may belong in

gravel. It is said

that bones have

been found in this pit.

Sept 4 - Sat. 1909

Gravel pit

Drove W from Union Ig
2nd part of Lombard
41 & 42 on road going
straight W. & a little
W. of Quincy is very
shallow.

Drove from S. & W.

21 1/2 mi

Looked down very old

river bed in

S. on road

bottom of creek

stumps. Photos 5 & 26

See
Lake



Quincy & Union Ig. Drove out
along road a few miles
Lombard.

Found gravel pit in line of
road & west of road.

It is full of water. In city

2-3 ft.

See map
of city
constant

Quincy & with road

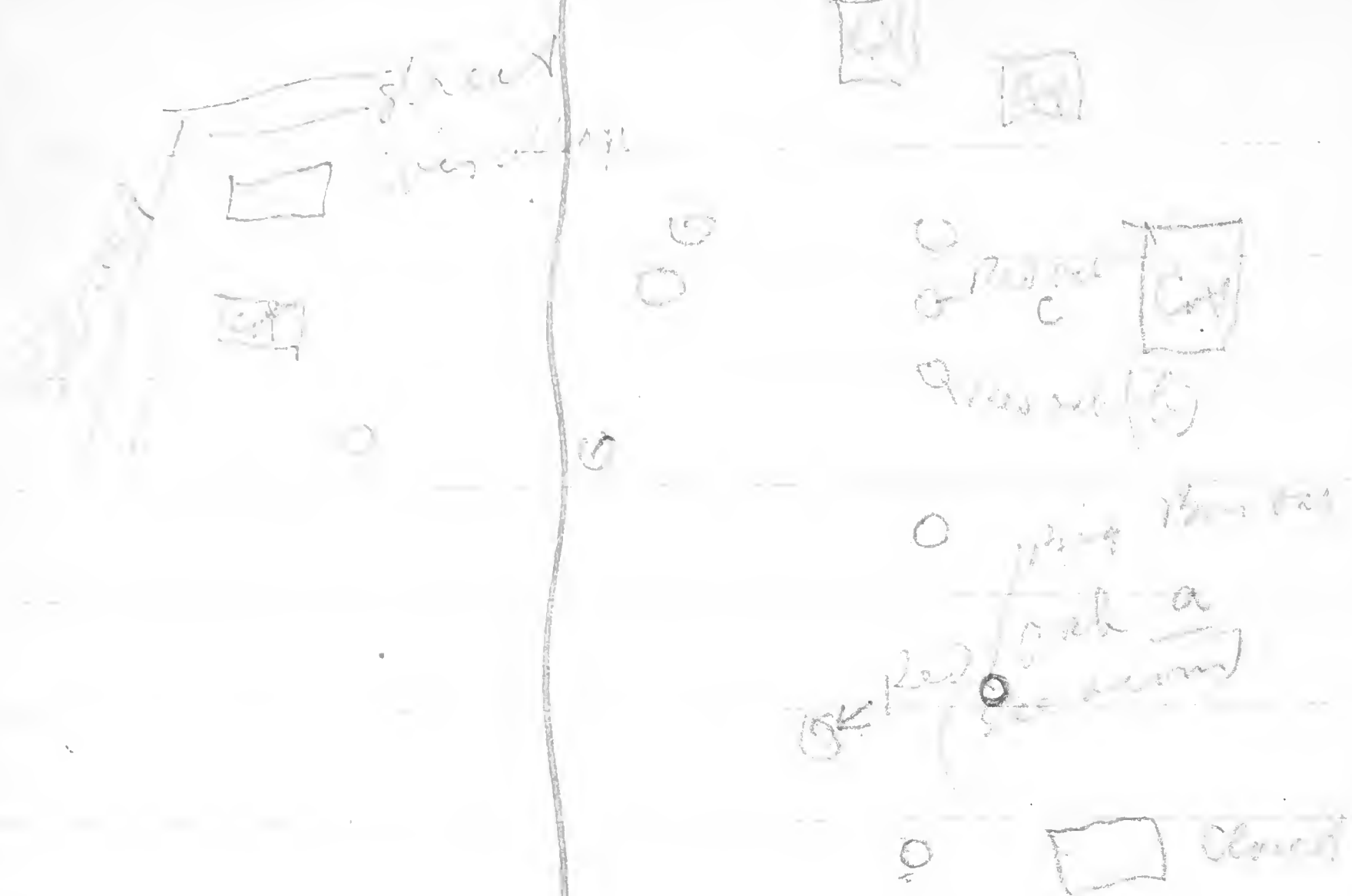
3-4 ft.

4 ft.

at bottom of road
with water

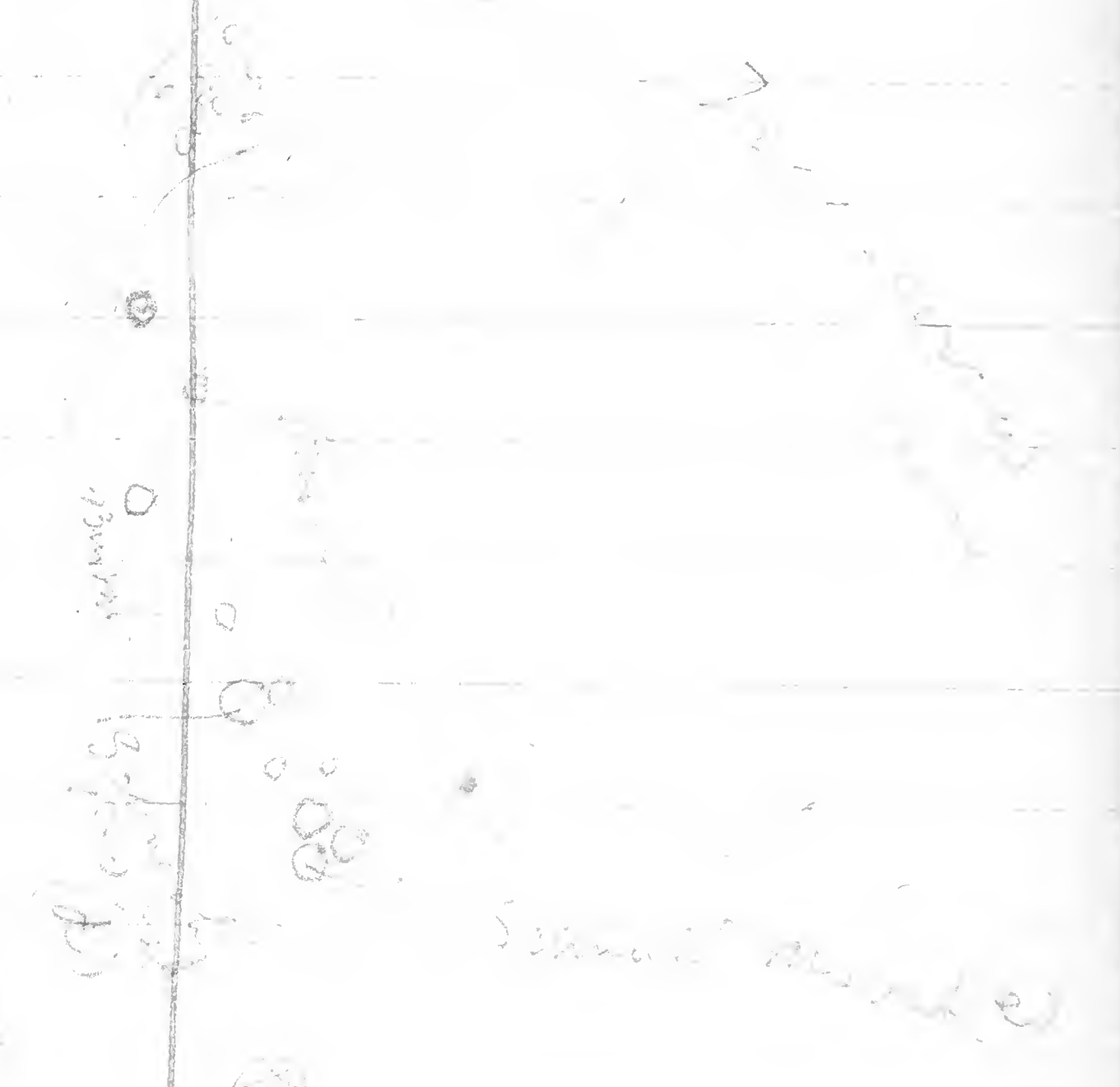
at bottom of road

stumps & other things
more down, 1/2 mi. S. of



Per only 1000 ft. on from which
moving from 1000 ft. to 1000 ft.
even out the road.

Handwritten note: (1000 ft.)



Handwritten note: (1000 ft.)



Reaching 1909 20. School's
 d. v. e.

d. v. e.

Reaching 1909 20. School's
 d. v. e.

Reaching 1909 20. School's
 d. v. e.

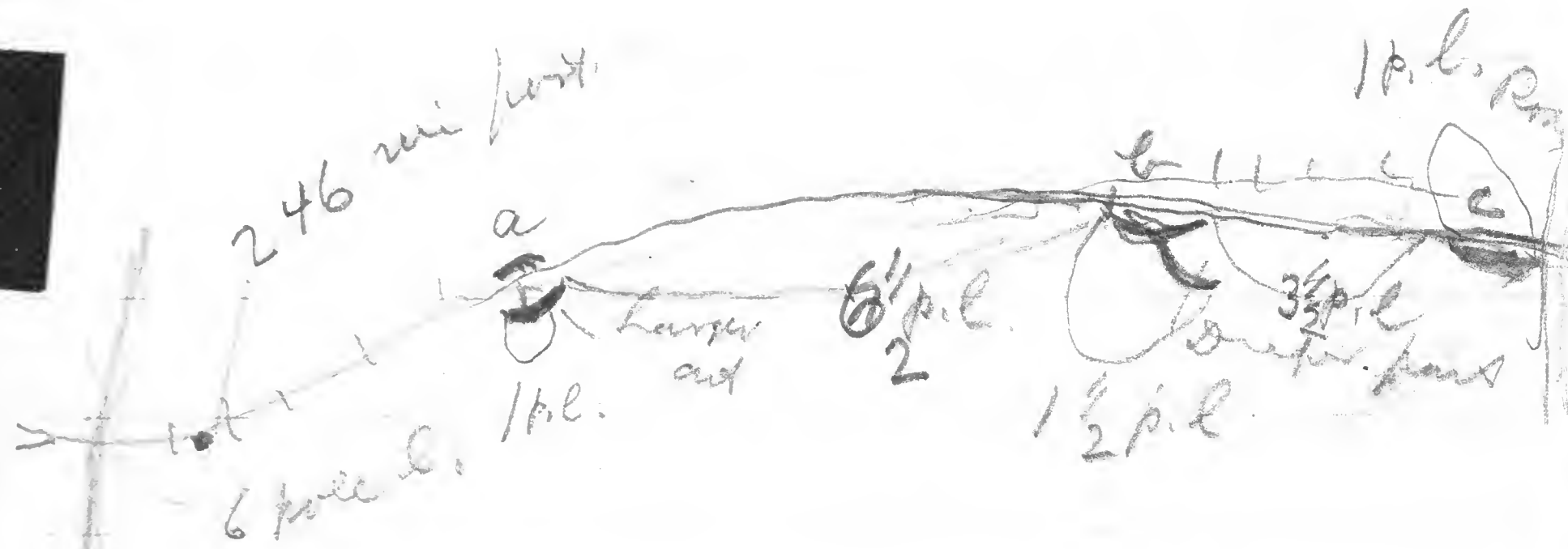
Reached Inwood after 9
 Took dinner with Kate &
 the kids.
 Joe bought bike, or
 rather checked at
 Lamborn, & I saw him
 for a moment at the
 depot.

Left at 2:30 PM. + met
 Dr. Bemis (of 1909) on
 train. Lives at Spencer
 and will be in Des
 Moines for a while.

Reached Inwood after
 9 PM. + put up at
 Inwood House.

Sep. 5 - (Sunday), 1909
 Day bright, - wind was
 cold.
 Started along RR. west
 walked out about $\frac{3}{4}$ mi.
 West.

Pole l. = 180 ft.



as (a) a short cut between

2-3/4 Soil etc
Sandy
Gravelly, dark
Sandy etc

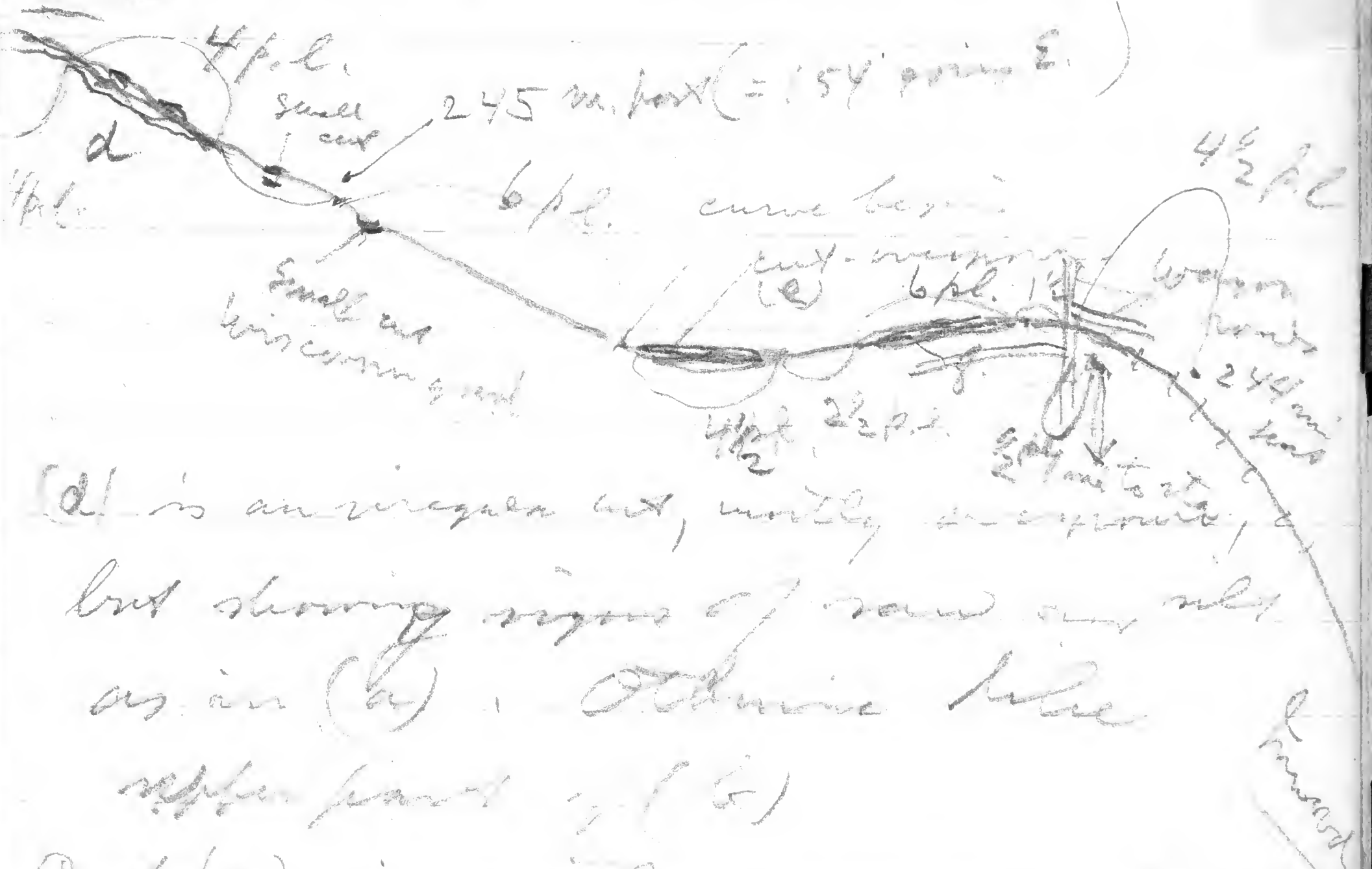
6/4/2014

Middle beds show stratification
 (horizontally) lines of ^{beds} of sand
 & fine gravel (about
 1000 ft. thick)

Rev Charles Cleveland,
esp in family love.

This is undoubtedly the same

cut C is irregular & shows 6-8 ft of
dark Kansan below. Below 15 ft
= Wisconsin, with very small red bones
& with pebbles. Could not trace line.
cut (C) is same as upper part of (A).



(d) is an irregular cut, mostly ^{2 1/2 to 3} in exposure, but showing signs of saw on sides as in (a). Old mine hole upper part of (b)

Cut (e) is mostly ~~unexposed~~, but
shows heavy top dressing, 2
ft or more thick (see
sample). This cut is lower,
shows no Wisconsin,
Took sample 6 ft from top
of E. end, N. side -
also nodules.

f. is low margin but, also in
loam.

all the hills along cut
a, b, c, are Wisconsin to
surface, & Solidsays ridge
is the most common type
Photo 33 & 34 - Snap - Solidsays
ridge on hill above cut (b)
Pentelom. Oligostylus very common

The change from Wisconsin
to Kansan - loess from
mud cut d cut e is very
abrupt.

It is interesting to note
that the rougher Wisconsin
surfaces W. are seldom
cultivated, but are used as
pasture & are covered with
Solidsays ridge, while
the Kansan loess is all
under cultivation with
fine crops.

Left for Canton at 12:45

Took lunch at Canton - RR. depot.

Noticed that the mountains
emerge from the
Canton

The ridges on the
side are certainly
Missouri or earlier. Gravel
& boulders appear everywhere.
The mountain's peak stands
higher than general plateau
S. The valley runs along
nearly on a level & the
bluffs are evidently
formed by cutting.

At Fairview S. side, are
great gravel beds, stratified
& cross bedded, & having
aspect of Kansan City
gravels. The C. & N. W. P.
is taking out great quantities
of gravel. These gravel

form terraces along river.
They are evidently Wisconsin
gravel terraces.

The Big Sioux Valley
is mostly quite wide, &
contains plenty of
sand & gravel bars.

There are now numerous
sand & gravel bars.

Reached Akron at
3:30 pm & put up at the
New Kendall Hotel.

Expected to run out, but
it continued to rain, &
continued a fine drizzle
all night.

Sept. 6 (Mon)

Still raining, with promise
of an all day of it.

This summer has certainly seen
a hoodoo.

R. B. Smith is editor of
the Register Tribune.
Called at his office.

He saw that in N. H. Sec. 33

93-48-5

Section, near the mill,
of the river was known.

Prof. S. S. Sibley was present
& asked where the
fossil - (to go there)

Rev. Robert Sibley
Sioux City, Ia.
(he was at Sibley since)

The captured the eye in the
fossil form -

Prof. O. J. Smith
Pollock, So. Dak.
was present at the
Jensen table was found.

Miss Maggie Kunder
Akron, Ia. -

Found a lot of small
and a few medium
of various sizes.
Went to the top of the
to the top.

Found a lot of 15 ft
in size, yellow brown
and in the center $\frac{2}{3}$
with streaks of white.
I found a lot of them
in the clay. See sample.

The upper part of the section
consists of a thin
iron containing
The lower part is
nearly all iron
upward from the top
probably a good deal
and with some small
pebbles - all evidently
Kansan.

On W. side, where bank
was so good, the
section about 12 ft high
of iron ore. The
laminated (thin) iron.
The ore was found in
12 ft, and was found
in the top of the
section, the iron
was found in the
top of the section.
Probably 12 ft of ore exposed.

Found Pyramides almost
 every where, common, as
 the fossils.



□
 may

(yes, only about 8 ft. across
 of hill or mound) 45

Just at middle of hill
 No. 32. Found many
 or less some of the fossils
 to 5, a cut a foot deep
 shows many small nodules
 (like 3, of the nodules
 very generally) & also
 some specimens of
 the small nodules.

Went to Jackson Hill
 The section across was
 from 20 ft. to 30 ft.
 This was 1882, & could
 not be seen.

all kinds of rock that
 they had some green
 clay & some dark clay.
 Well about 247 yrs. old.
 Made by Butcher, who
 have just across the bridge
 in So. Dakota

Underneath the sand
 they are hardpan.
 I saw the two teeth, one
 with fragment of jaw
 attached, in school at
 Ashm. Each has 8
 pairs of teeth, the last one
 or two very small. All
 but the last two pairs
 were worn down so
 that teeth were about
 as flat as the last
 teeth.

The topography in general
 vicinity is rolling prairie,
 & there is a side road
 just a mile or so away from
 being E. of the mine.
 The creek here begins
 flowing E. with north
 There are no more marks
 of a creek bottom.

The well is probably 36' 47
 ft or more above creek valley.
 The well is about 140 ft in
 S. of road & 300 ft from E. of
 W. line of ore.
 The shaft is a deep corner.

Mr. Sample, and Mr. of
 Johnson place make well
 recently & from top of
 following:

- 1-2 ft clay over day
- with small stones
- 8 in. about 2 ft
- Gravel - stuck with
- into this
- about 1 1/2 ft of sand
- rest in shale

• Mrs. Seale's place (well)
is several feet lower
than the former well, &
means a good, - probably
a way.

With plants 7 & 8

Looking E across Seale's
well (no pump) & across
former well.

Seale's well ^{low well}
L.P.

I had been out with
a little N. of pump.

In low place from cella
I saw fragments of
Dorchester.

In the valley, 7 ft deep,
the loose bits of shell on
ground - a foot or less, &
then some more - like
big clumps of grass in the
ground.

There are Splendens shells
in this place.

The low well is the

The stuff is mixed,
but Splendens is the

Photo 2 & 3 - looking north
E. from the well - across
Seale's well - to the
green hills.

There are
low hills - high on
highest point!

Photos 25 & 26 - level
W -

Bluff
Forest along
top of clearing, lower

All along road top
was level lower slopes

cut 2

Photo extends down hill
to E. & shows about 5
ft. (about 3 or 2 ft.
very irregular, small)

1 - lower part shows
strata of sand as in
cut 1.

Cut 3 is on slope up to
summit, shows irregular
layers, & some of the
green, sandy strata
only on lower slope.

This cut is in same ridge as
cut (1).

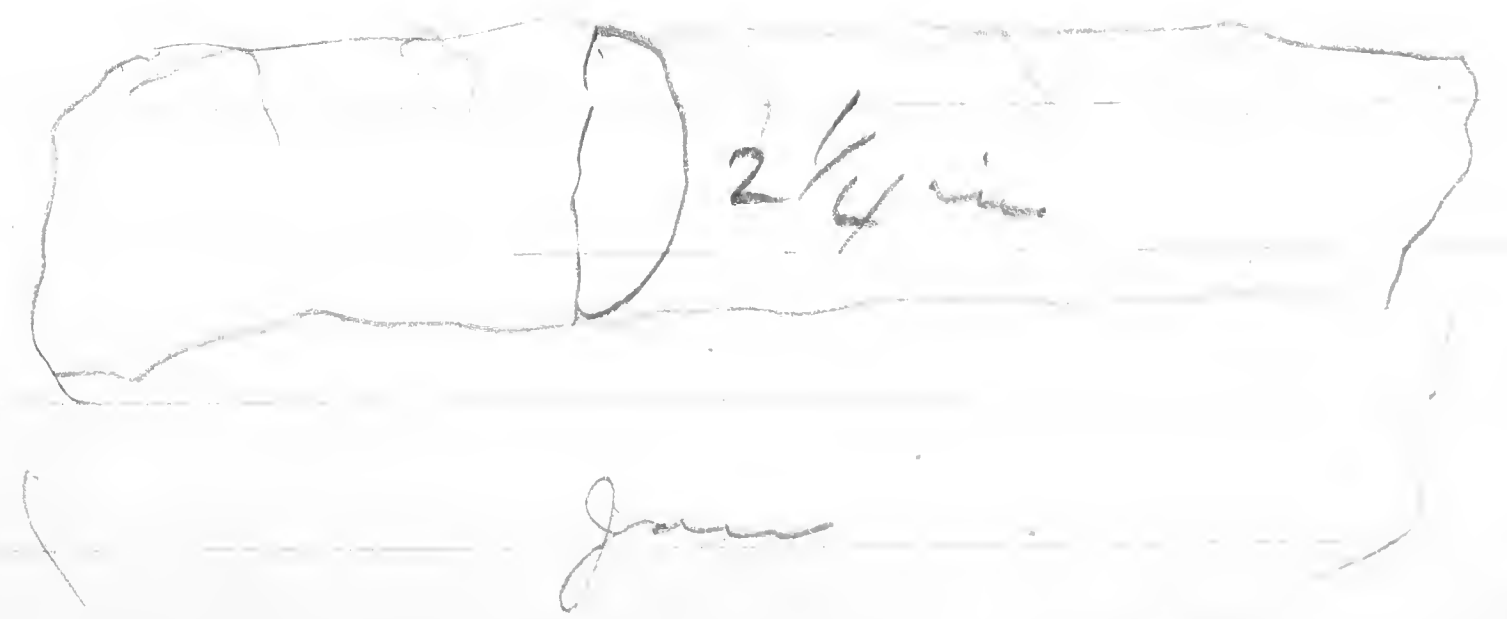
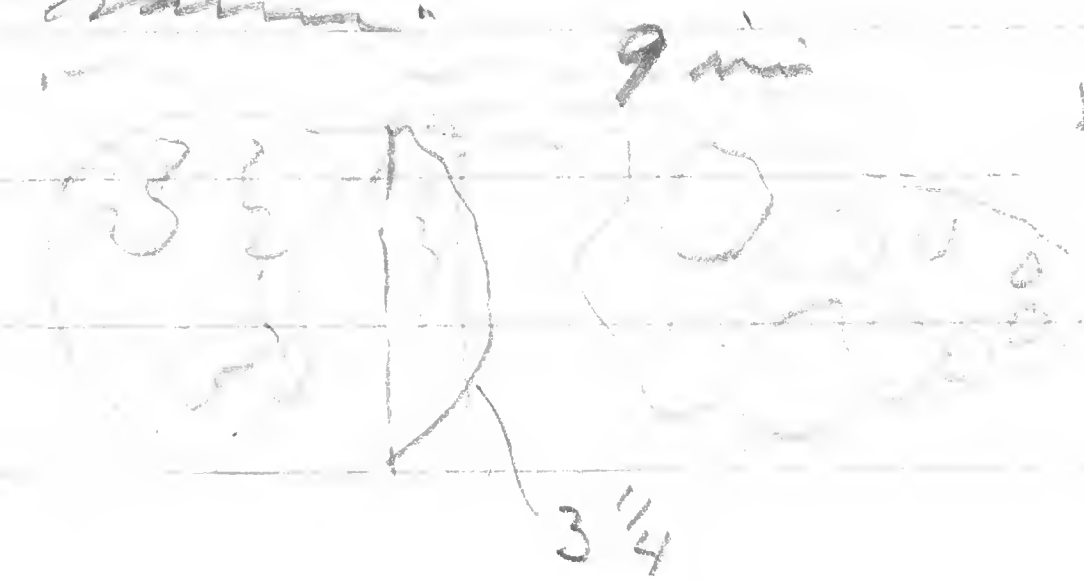
Remained cloudy all day.

Sep. 7, (Fris.)

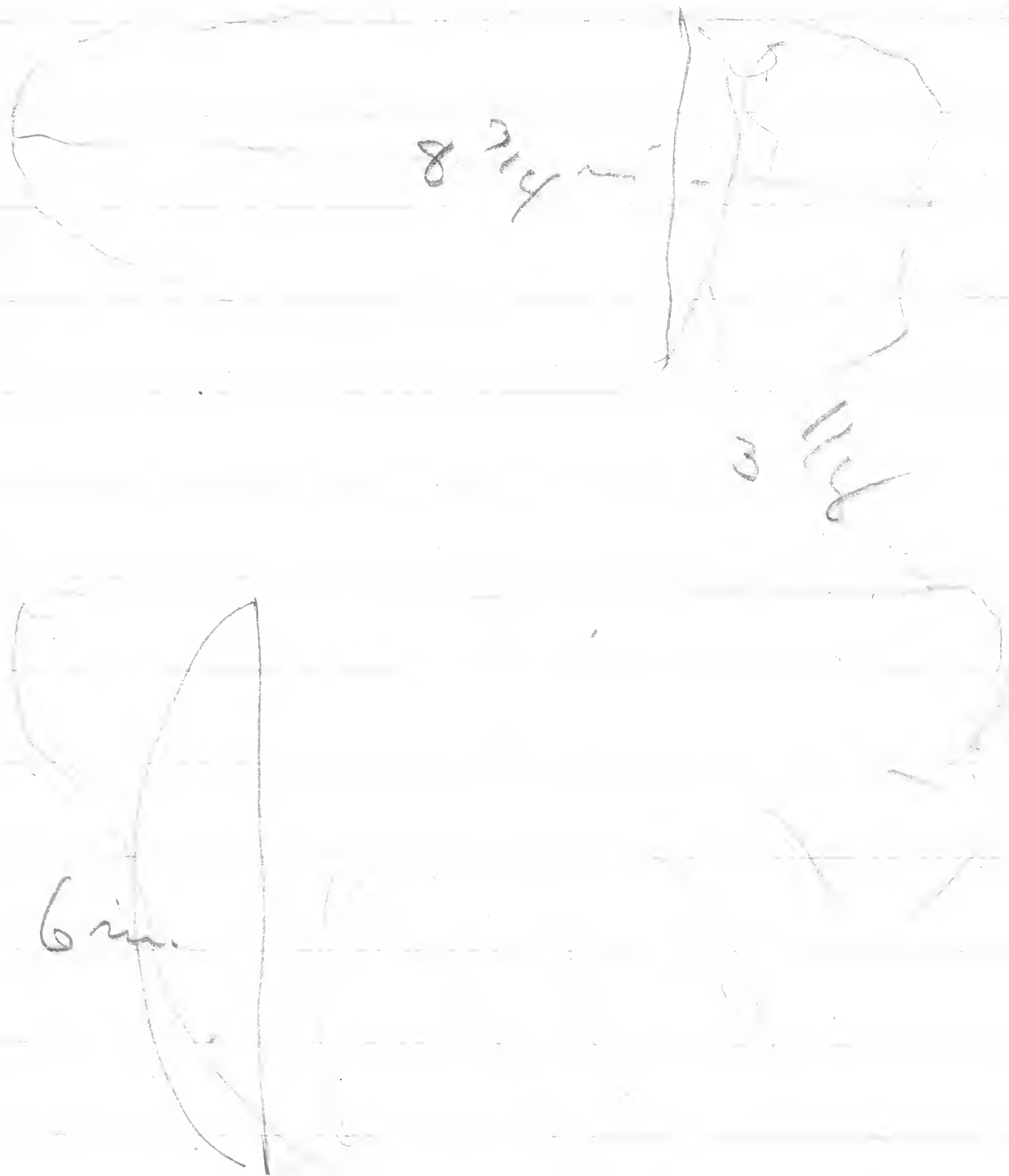
Misty in morning, but cleared.
Went to schoolhouse and
took photos of Tact.

Photo 15 & 16 - Top view of
Tact (1) - the one with
fragments of grain.

Photo H & I - side view of
same.



Tooth (2)
Placer (4) km top view
" 9400 - side view.



Loc 7. Single is from
primordial

Left for Chatsworth at
11:40 am. Started about
for bluff 2 mi N.
of Chatsworth. There
are two large exposures
well shown, & a



This is overgrown (cut 2)
cut 1-

Loam 1/8 ft.

Kamran

cross-bedded sand & gravel
(Cappadocia)

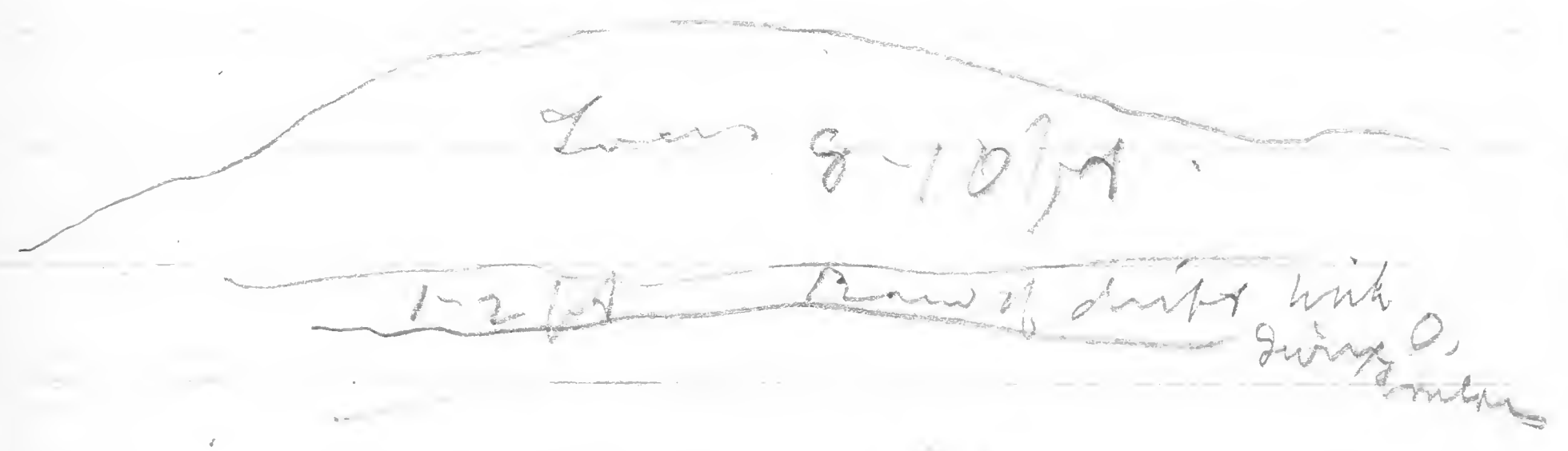
Black shale

The loam is brownish yellow,
without shells, & with very
few small nodules.
It is medium compact
In its lower part it shows
for 2 or 3 ft a mixture
of sand bands & loam bands
as at above, but not
so thick.
The line between loam &
Kamran is sandy.
The upper part of
Kamran is mostly joint
clay, bluish, with
few pebbles. Below this
is typical western Kamran
It is separated from the
lower gravel & sand by
a strongly marked sharp
band, about 1-2 ft thick
& below this is black
shale.

rock sample of loam
15 ft from top & sample
of loam 1 1/2 ft below
Loam.

cut (2) is similar, but
loam not so thick.

cut 3.

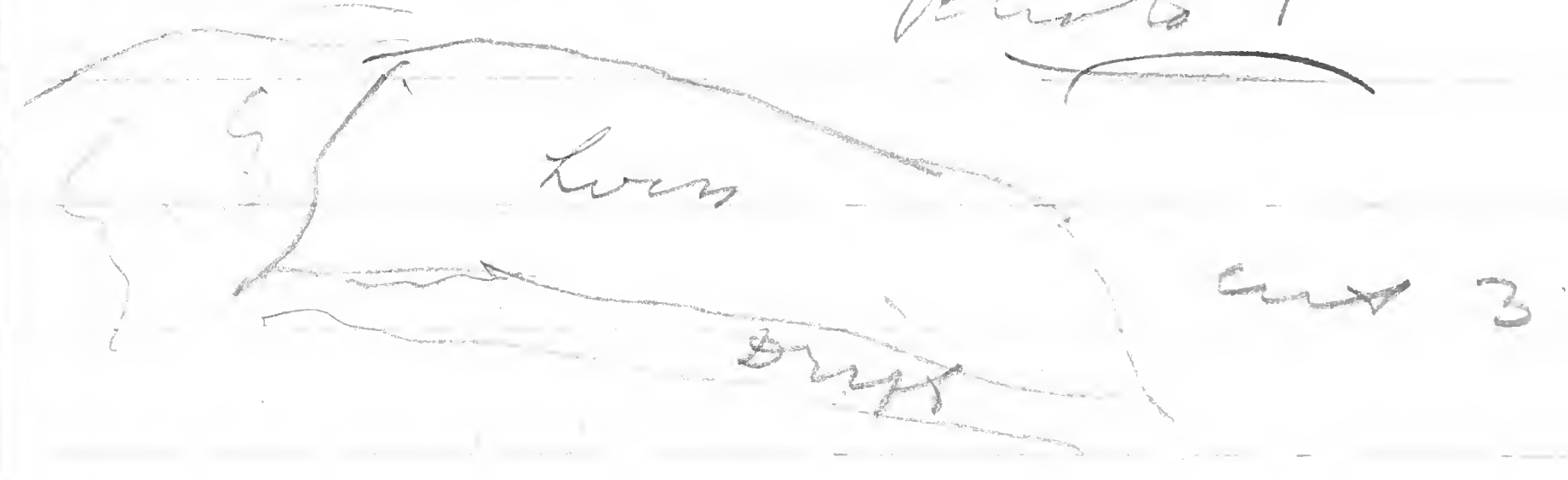


Shale 20 ft+

at N. end of this cut,
beyond my frame,
the whole hill slides
into - there are shavings
evidently gravel & sand -

unimouth.

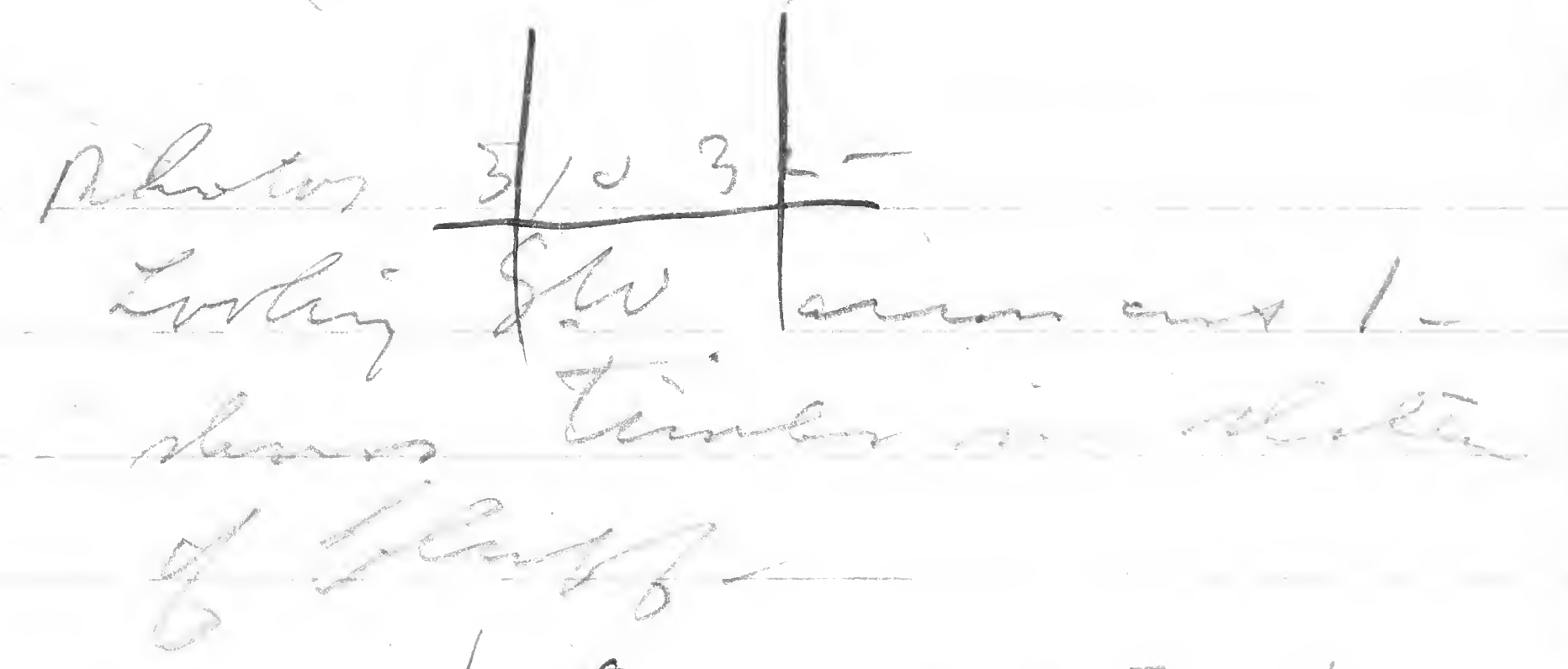
Photo 1



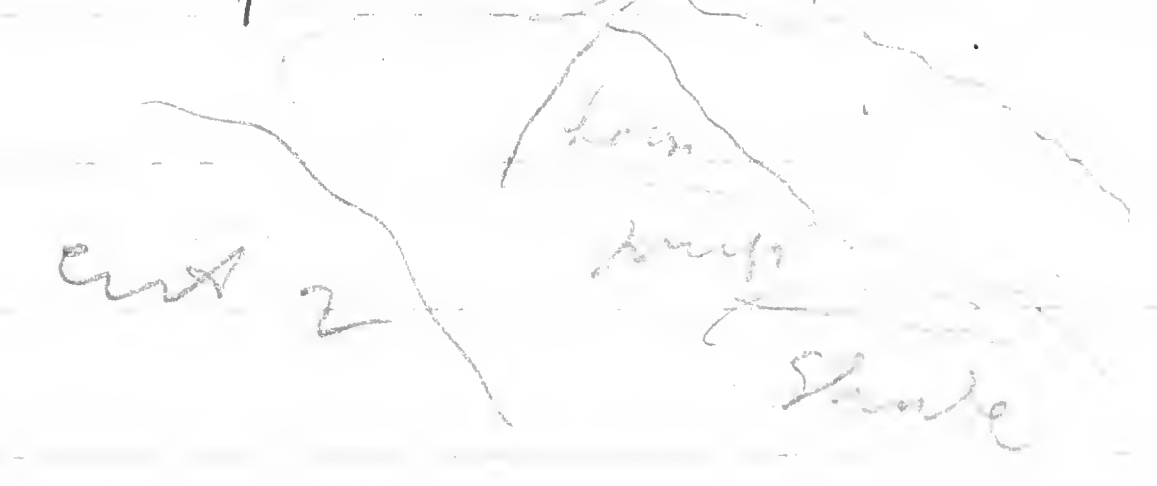
Shale.

Photo 2 - cut 3

Looking N.



Photos 5/0 - cut 2 & 1



Left for Sioux City
at 4 pm.

The hills below Westfield
become rougher, more
peaks -

To Westfield they form
a Kansan tableland.

Put up at West Hotel in
Sioux City.

Met Mr. White, a brother of
Senator White, who practices
law (?) at the Grove. Had
urgent invitation from him to visit
also met Mr. J. Donahue, probate
of West, who is one of my
old academy boys.

Sept. 8 (Wed) 1909

Arranged materials, bought
plates & loaded plate holder,
put away bike, and at 10¹⁵
am left for Sargent's Bluff.
A cloudy, windy day.

cut 4 is S.E. most cut - all the
cuts mean to be at ends

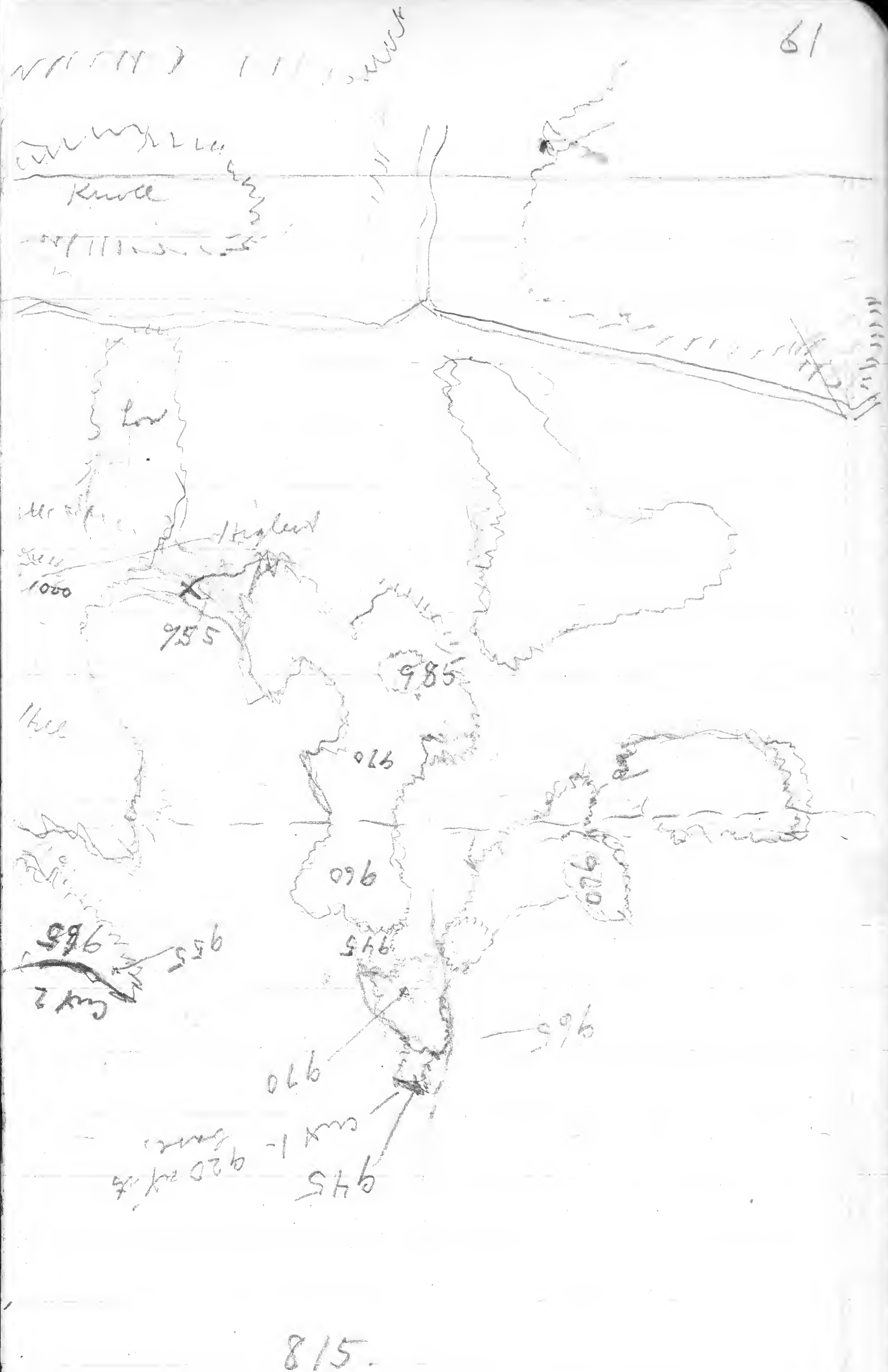


The afternoon (?) is tilted to SE,
pushed up. It seems to be
silty above, and sandier
below. The sand is pale yellow, ^{with iron} streaks.
The loess is yellow.

Along top of black shale
is a very black line which looks like MnO₂.



S. line no. 29



Row S, line no. 30

Cut 1 is through loess - lighter
& not laminated above, more
compact, brownish, & laminated
below. Fossils all through,
few small nodules, especially
above.

about 20 ft. exposure.
Large number of fossils,
scattered all through, but
more abundant upward.
Nothing but loess exposed
in this cut.

Bottom about 815'

Cut 2 - about 12 ft
of rather coarse sand,
cross-bedded & with a
few small boulders.
Above this is stratum
(near top) with MnO₂.
above it is an
irregular layer of

Loess - but is scarcely
reddish - it reaches
probably 10 ft, & its
upper part has large
nodules of limonite.
Above this the gravelly till
rises to ridges of loess
near top -

The base of this cut is
890 ft.

See sample of joint clay.
Few large boulders of Sioux Q.
in afternoon.

This gravel pit has been
worked for years, & they
have not reached bottom.
No coarse gravel.
No bones or teeth.

cut 2

shaded
area

rim

young clay

nodules

nodules

nodules

took photos 7/8

The young clay is fairly heavy & sandy
below it is very heavy

65

Foot of hill at cut 2 815

Top of loose of rock (mud?) 865

Loose usually stuff like

in cut 4

Top of hill = 965

Photos 0/1/2 - looking SE.
from above cut 2 towards
cut 1

Photos 0/2/2 - Looking N.
from about cut 2 - towards
highest point

Photo 9 - Looking W. of hill.
from same pt.
Timber in western valley

Cut 3 shows reddish
Laveland for 12 or
15 ft. with large
nodules in its lower
part. It is pebbly below.
No loess shows in
cut proper, but
the hill above is
loess.
The reading at base
is 895.

Top of cut 4 = 885

Top of sandstone = 870 in cut 4
at S E end.

Top of shale = 840 +

Bottom just above cut 4
= 815

Bottom of pit is about 810

Top shale in cut 5 = 855

" sandstone " " = 870

Cut 5 shows only shale &
sandstone, but hill
above is capped with
loess.

Photo 10 = 1/4 mi. N. of
ammonite - hill.

Cut 6 - shows shale below,
then white sandstone, &
above at 895 ft there
is a shelf cut of loess -
The loess end above it
is about 15 ft. (The hill
comes close to where RR &
wagon road intersect - very
flat is not quite correct.
The loess has a few small
nodules & no shells.

This upper loess is light yellow, soft & crumbly easily.

The lower part of the loess, below the shelf, is distinctly laminated.

The loess extends down to about 875 ft.

Under this I saw at least 3 ft of blue joint clay (Kansan) into which loess passes through a foot or two of reddish gravelly (remnant) stuff.

This blue joint clay is same as in cut 4?

The dark shale begins at about 870 ft.

Then under is there is a pocket of sand, & then more dark shale.

Base of cut = 830
RR = 825

There is distinct shale above sandstone. This is finely laminated, and at first I thought it was pre-Kansan, but it is clear shale.

The barometric readings were very satisfactory, there being little fluctuation.

Found that laborers at Richman are Mexicans. One young man, evidently time-keeper - went to Sioux City with me. He is an intelligent fellow who writes his own language, and whom I could

in part understood. He spoke
with appreciation of his gospodar
Nikola, son of Russia.

He expects to return to Cetyń
after three years. Says English
is hard for him.

His name is Mitar Weljovich
& P.O. is Sargeant's Bluff.
He says "S Projeur" in parting.

Spent evening in pressing
plants, etc.

Remained

Sep. 9, (Thurs.) 1909

Went N. beyond Riveride.
Visited Ryder sand pit on the
old John Henney (they call it
Maloney) place.

The pit shows pockets ^{of} ~~of~~ ^{veins}
sand, over which a couple
of feet or so of joint clay
(gray or bluish) of the
Lowland texture, is folded
& masses above. There is
every indication here of folding.
Above the joint clay the loess
begins quite abruptly, & fully
20 ft. of loess is exposed.
The loess is the ordinary light
yellow loess - 2 to 3 units.
Few nodules.

In sand are some old
plates, etc.
The sand is evidently
Aftonian.

Top of Ryder pit 965
Road opp 975
" at angle West 890

Top of hill above cut —
(Indian bones, shell) = 1020
Barren = 28.69.

at (X) top of bank
Bar = 28.68
alt = 1015.

Photo 18 (looking across from X
to Indian pits. (26)
Photo 19 (same - (27)

N. A. Anderson
Box 156
(North Platte) Sioux City
Ia.

Will save bones, etc.
Promised little allowance,

Mrs. Anderson has found
the specimens which he
gave me in the three
pits about his place.

He says there is no gravel,
but all sand in his pit,
down to a white "like
limestone", into which latter
he has bored 18 ft.

The teeth, etc., came from
the sand, and are undoubtedly
Aftonian.

When he first opened
pit he had a layer of
sand about 30 ft., but
now in middle pit he
has about 22 ft.

He has found various bones, —
one very large & flat,
evidently scapula of
Pachyderm.

Among pieces received were
 claw of Megalonyx
 teeth of horse (fragments)
 etc

Also a fragment of
 Cephalopod shell (nodular)
 there are also pieces of wood?

Plots	192	(26)	middle bit
"	29	(27)	" "
Plots	20	(27)	" "
"	20	(27)	" "

The sand in the middle
 exposure is white, cross-bedded,
 with some iron streaks &
 in upper part a few
 thin O₂ streaks.
 The photos were taken
 just opposite fork

("interlocking drift") which
 is now broken.



The Kansan is in part
typical, & in part (especially
above sand exposure)

like just joint clay
The line between Kansan
& Astoria is very sharp.
& oxidized in drift.

The cut to new (To left)

at its S. end shows

Astorian below

the line between is

Kansan is sharp, contains

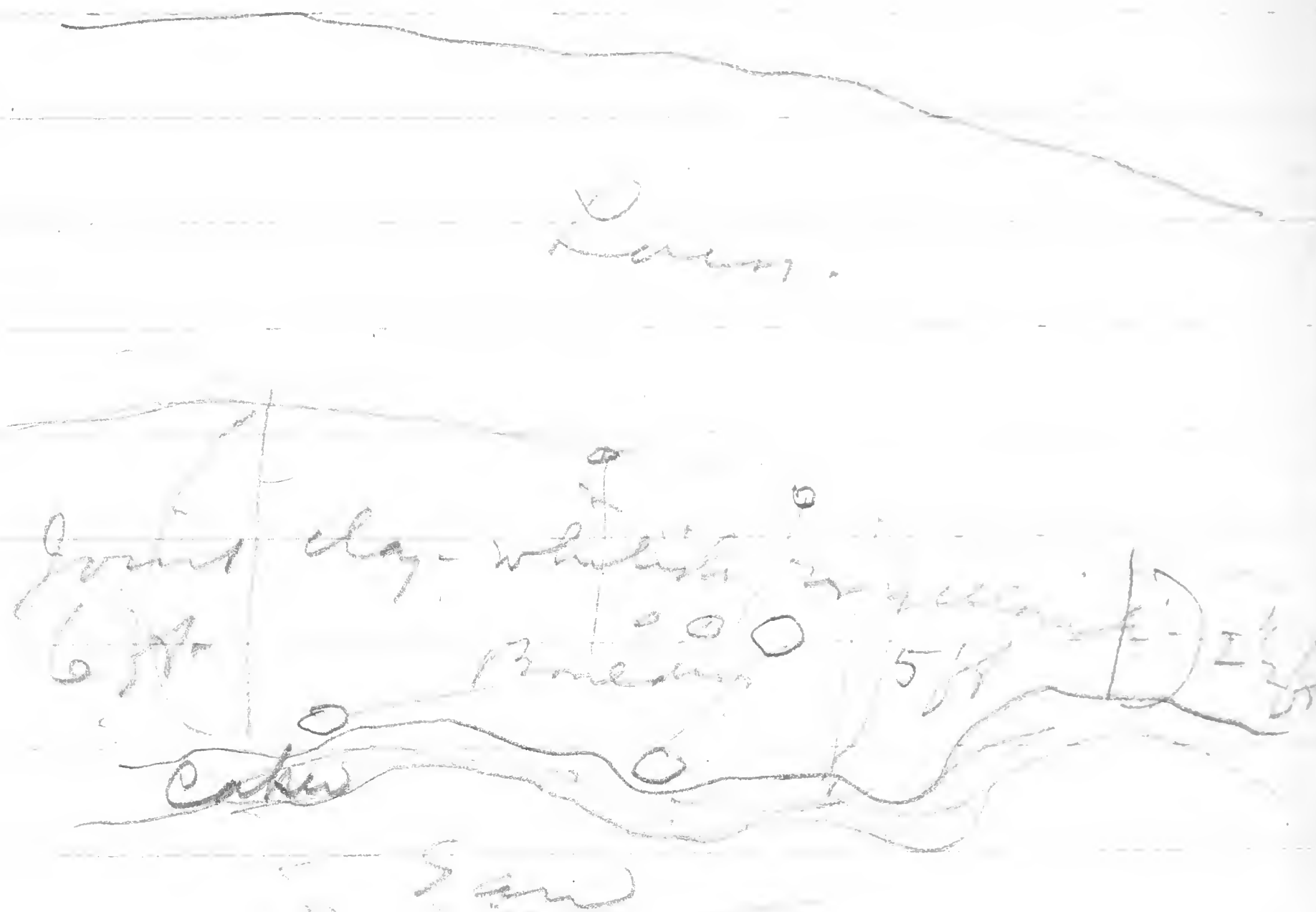
lime contents & black

strata for 6-12 in

or more, also shaly

strata.

Same sand as before



Valley

Thin in S. end of new cut.

Plot 30 - (27) shows above.

3 - (26) same.

Base of pit 965

Base 28. 75

Sand rises 18 ft. higher

Down soft red sand (white)

in sand



very high and

Norm 26.57

$$\lambda_{ls} = 11.25 \mu.$$

Photo 4 (201) - 2017.11.11

1/20

Plot 21 (77) = 1/50 m

Mr R. Hunt is 1145 IV

Oct 22 (27) looking N. from

M. J. C.

Photo 41 (26)

Photo 42 (26) Looking S from same 1/3

11-27) Name

v. c. = very common

—

16.2: ~~2nd~~ 2nd

21. C. Not coming 79

2. 2. 2. 2. 2.

W. 12 = very rare

Plants on the Great Horn Hill

W. W. & L. C.

Solidus (Nominally) 1.00

4. Concord, N.C.

2. *Alnus* *glabra* *Mill.* C

ameliorate the situation

Solidity 100% v.c

Antenna - *antennae* - VC

... V.C

Exhibit 1-12

City of New York

Grandi, on a (one way).

Trigonostema n. c.

Camden V. C.

Handwritten signature: *Wm. L. G. ...*

[Faint handwritten notes at the bottom of the page]

Yucca argenteifolia M. & C.

amiripha rana n. l.

Pr. a. minima *angustula*

Halophila rubra in NC

~~Exhibit~~ - given N. 2.

1891-1892

Hyacinth - *Hyacinth*

[Faint handwritten notes]

gigleone stadi 2,0

Letter 1000

Argemone mexicana

Euphorbia myrsinites L. C

Parium capillare A. C.

Lithospermum angustifolium v.

Photo 1 (27) looking S
across woods only $\frac{1}{5}$
" A- (26) same $\frac{1}{5}$ +

Bottom at road 870 ft

at road where I went in
28.85 B m.
870 out.

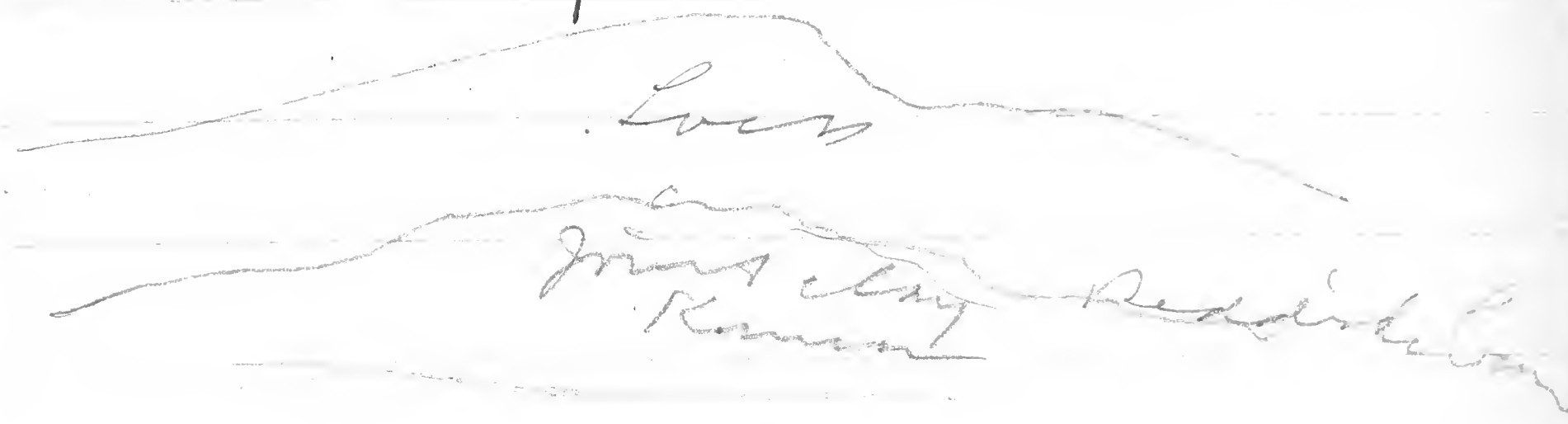
Photo 9 (27) - cut d)
The loess is only part above
ground here, with holes in
it

The loess both in d & e
is thin, probably not over
30 ft (estimate) with
considerable joint clay &
drift below it. Some boulders

Photo 33 (26) cut d.

this is part of Sioux City
Pierce & Tide works

Photo 10 (27) cut b



Shale

Photo 34 (26) same

Photo 7 (27) cut a

extensive in
Photo 7 (26) same

The afternoon at curve
of RR below entrance
to Park shows in cut
as follows:

If the old dumpsite is
and a, that my photos
7 + 7 are not (a), but
the down headstone just
before (b) is visible.
The road & gravel pit
is located just N. of curve
in R.R.

Sep. 10 (Fri)

Mr. H.C. Powers was charge
of the Sioux City reading
of Science & Letters.
Packed, shipped basket & press,
& went to Library & City Hall
to see Sioux Cy. Acad. of
Sci. & Letters collection.
Open Tues. & Fri. 2-4 PM.
At 10 am. took car for
Morningside, & went to end
of line, near E. W. 8th St. depot
(now abandoned)

about 20 ft
Long - 100 ft
white point along with 100 ft
7 ft Red gravel with
boulders
1 1/2 ft

At depot there is a long cut, extending from street to street, & running up to 18 ft in depth, or more.

It shows fine yellow (light) loess, laminated below, slightly reddish in upper 4-6 ft, with very few nodules & no shells, excepting possibly small fragments.

The cut about a block below, at curve, is deeper on S. side. It shows the same as depot cut.

In road cut, etc., I notice that nodular layer is very prominent above, for 2-4 ft. The loess is all yellow, light.

Cuts at corner of Rustin Ave & Leich Str. (along car line) show same yellow loess. Probably 20 ft in some cases exposed.

All the cuts in this vicinity, for several blocks, show same thing.

Some of the cuts are probably 30 ft deep. The lower part is then compact & red strata, above that laminated, & above that some yellow loess.

The big bluff next to Floyd river is at least 60 ft. high & seems to be all loess & like this.

Photos 31 & 32 show this bluff. Young cottonwoods on face.

Cherokee - horn of buffalo
ask where mastodon jaw
with teeth - on car.

came from
Have tusk which came
from Mapleton - all
broken up.

Have samples of soil
1500 at 6000 ft. Main.

Was sick all P. M.,
scarcely able to sleep about.
Left at 7:00 PM for New Valley,
received my mail, and returned.

Sept. 11 - (Sat.)

Rained early am.

Left for Codduffs at 10 am.
Went up to Florence.

Clouds of dust were raised
by wind from base of
Florence.

Photo (B) (C) - showing
along timbered bluffs of
Florence.

End of 22

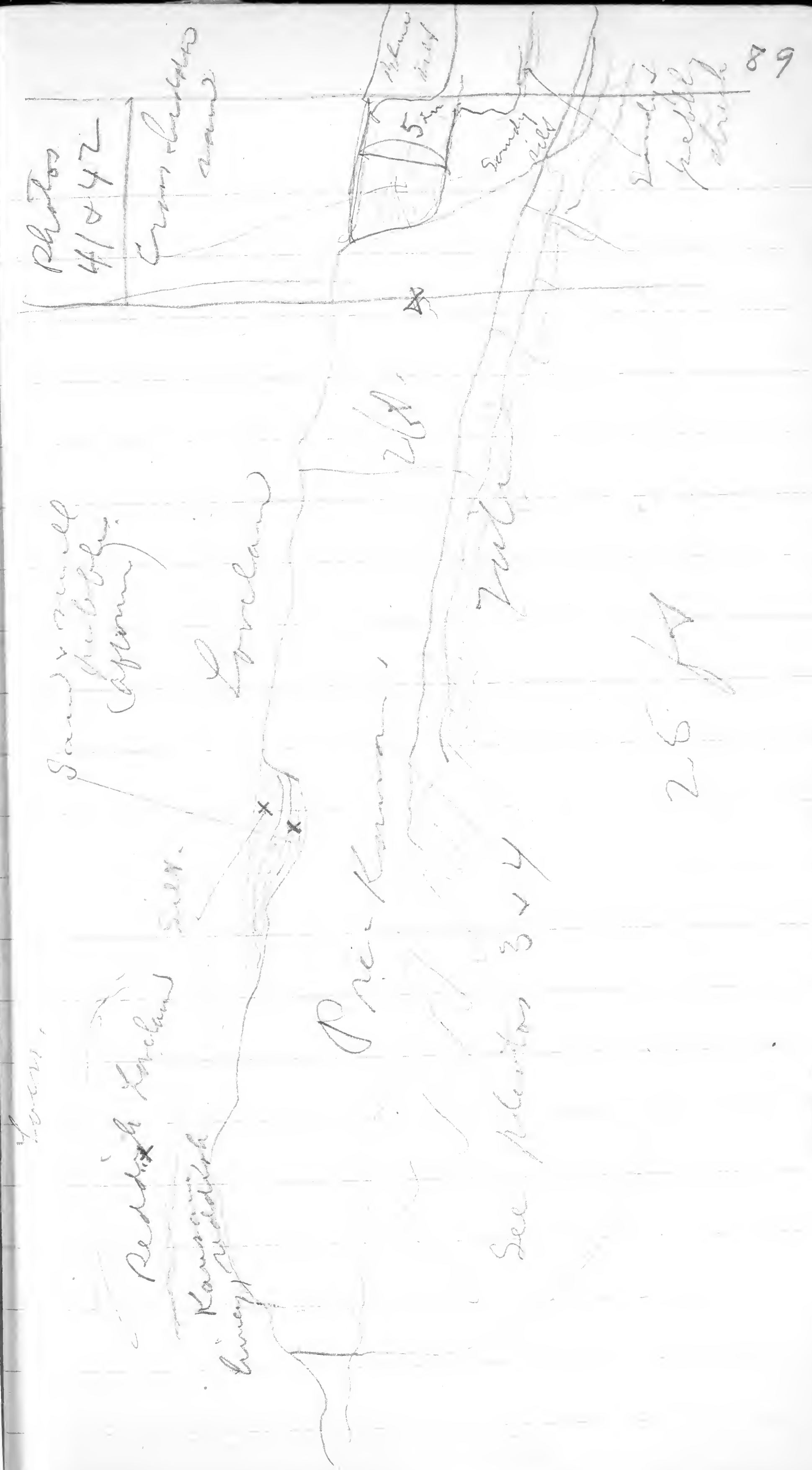
(1) At first cut above Pius Lake, - about 200 yds beyond where road, ^{just} above Pius Lake runs up hill; there is a gorge made by men fixing road.

Here Pre-Karn - black, with few dark pebbles & near top an occasional very small sand boulder, shows up to 10 ft above bottom land, 3 or 4 ft being exposed at highest point.

See sample of Loveland, ^{afternoon}, silt, & pre-Karnian, taken at point marked X

Look photos 4/242 at N. end.

Pre-Karnian shows here in 50 ft along bank to north.



(1) This exposure is at foot of high hill, more or less slumped over along the fault. However a heavy sandstone 100 yds N. of streamlet forming Pines Lake.

(2) About ~~200~~³⁹⁰ yds farther N. a coarse sand & fine gravel pit appears. It rises 6 or 7 ft above bottom land & extends down at least 6 ft. It shows cross bedding & seems to be tilted up towards west.

This is evidently Aftonian.

91
(3) Another smaller exposure about 100 ft N. shows some white silt nodules —

(4) Another ^{about} 205 yds north shows Aftonian up to at least 16 ft. above bottom land & 12 ft above road. The strata here also are somewhat westward (tilted up) & cross-bedding is distinct — this is coarse sand & fine gravel. The bottom above with numerous streaks & bands & clastings of mud. Some parts are quite sandy. This is certainly Aftonian. Loddan appears above, but part

is evidently slumped

- ~~about~~
(5) ~~about~~ N. and the
less distinct exposure
on big bluff above the
Lavelan extends up probably
50 ft. above road.

- (6) About 200 yds S. of
creek at foot of Long
hill a bank of loamy
stuff, but mixed, with
dark streaks etc & not
showing texture of loam,
shows a lot of layer
shells, see box.

At foot of Long hill on its
slope, east side, ^{about} 100 yds off. road,
there is a large spring.

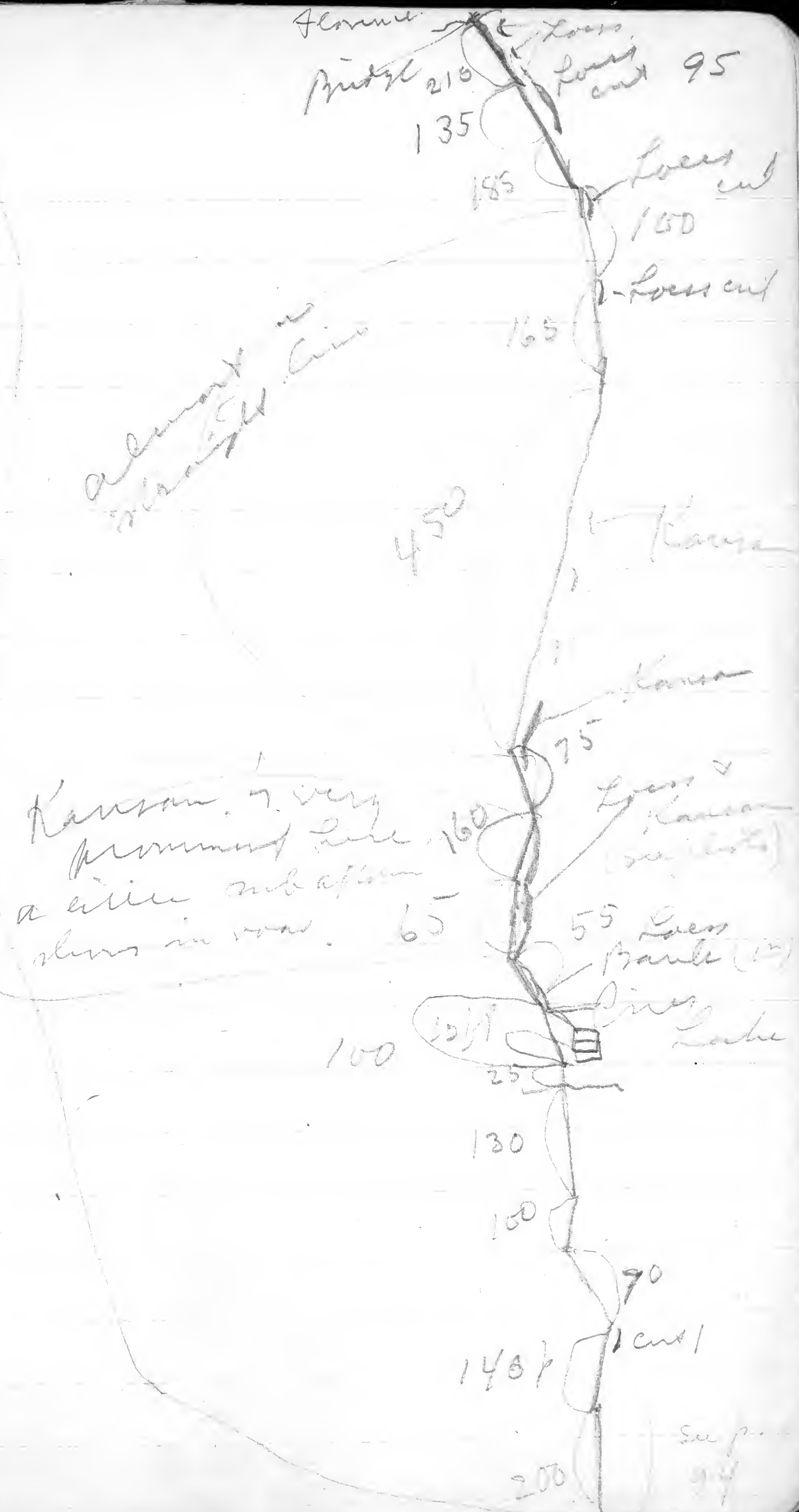
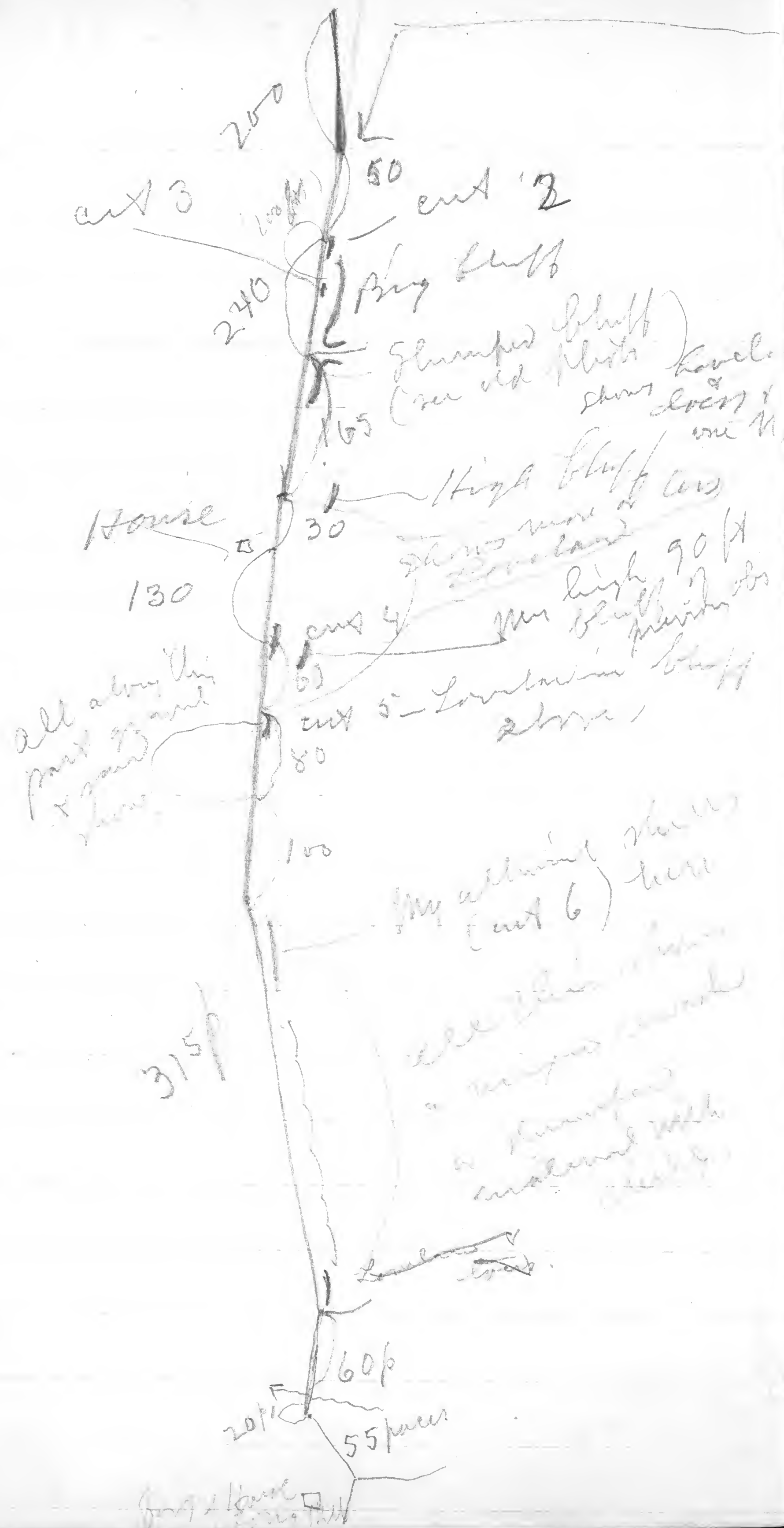
There is a group 93
of springs here.

Boulders, pebbles & sand
in the bed of streamlet
running from big spring
N.E. of Golden house
& pebbles, etc along
base of bluffs & in
general road indicate
that this group comes
from a stream.

A house stands on a hill
S of springs.

South of this & just
way up hill are

exposures which show
the Lavelan (see box)
prominent.



more or less sand & gravel,
& also much Loveland,
show between Pikes Lake
& Long Hill.

A little sand & gravel
shows in creek bed just
N. of Florence.

There are springs or
seepy places at cuts
2, 3, etc.

Also the large springs
below Long Hill also
evidence that springs
belong (in this territory)
eventually to the
Aftonian.

The Loveland is more
or less prominent all
along the bluff, sometimes
only a thin layer, and

again quite thick.

It is evident that
the Aftonian extends
under nearly all these
bluffs.

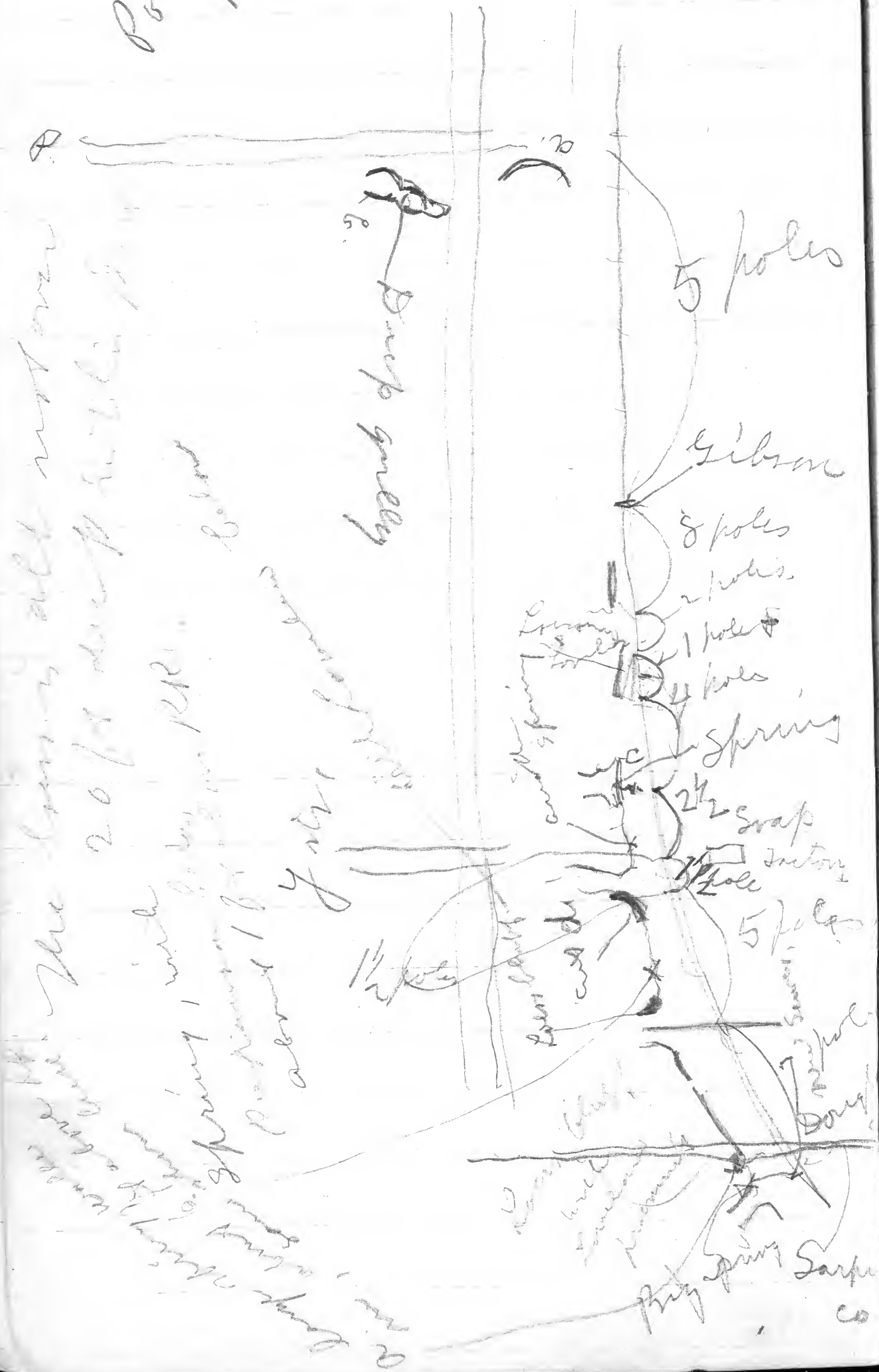
The alluvial layer
containing large shells
lies just at level of and
above road. It is
evidently like the
alluvial layer on E.
side of river, and may
represent partly the
object of the survey.

The workmen have been
grading road, and this
made observations
unusually favorable.

Poles = 150 ft

1909 Sep 12 - Sunday

Went S. with
Gibson + Gallatin
Rained all am



2250
75

99

Cut (a), now dumped, contains
burning sawpit. The gravel
(upside) is strongly bedded,
& the line between it
and loess is sharp. Below, the
sand is clearly below
the loess, and hence
afternoon.

It appears like a
forked however, and
probably represents a
lower part. This is
also suggested by altitude.

Reading at base of cut =

Bar. 28.82 - 1000

Reading at RR line = 975

Bar. 28.84

In cut b - the loess
shows above afternoon, - pebbles
below.

In the deeper part of the (b.)

washout the Aftonian
shows below Laveland &
a depth of at least
15 feet.

The upper 12 ft. ^{more} feet
is pretty regularly
horizontally bedded, the
layers being alternately
fine sand & fine sandy
silt. Then below that
there is coarser sharp sand,
more like ordinary Aftonian,
appears below. This
part is strongly oxidized
above, little streaks
& bands of Mn O₂.

The east part (shallower)
Cut (b) has Aftonian
(top) also at 1000 ft

At the point (c) a stray
spring comes out ^{2 or 3 ft above surface}. There is
here a layer of pre-Karnian
over 1 ft. deep. Above this
are 2+ ft. of a conglomerate
(very limy, & with some iron),
and above this some sand
& gravel appears. Out of
this comes the water.

Cut d. is sharp exposure
extending well up toward
top of hill, with very distinct
yellow columnar rock resting
on red Laveland which connects
The dump below and out
permeates of close connection
of lower part.
See figure on next
page.

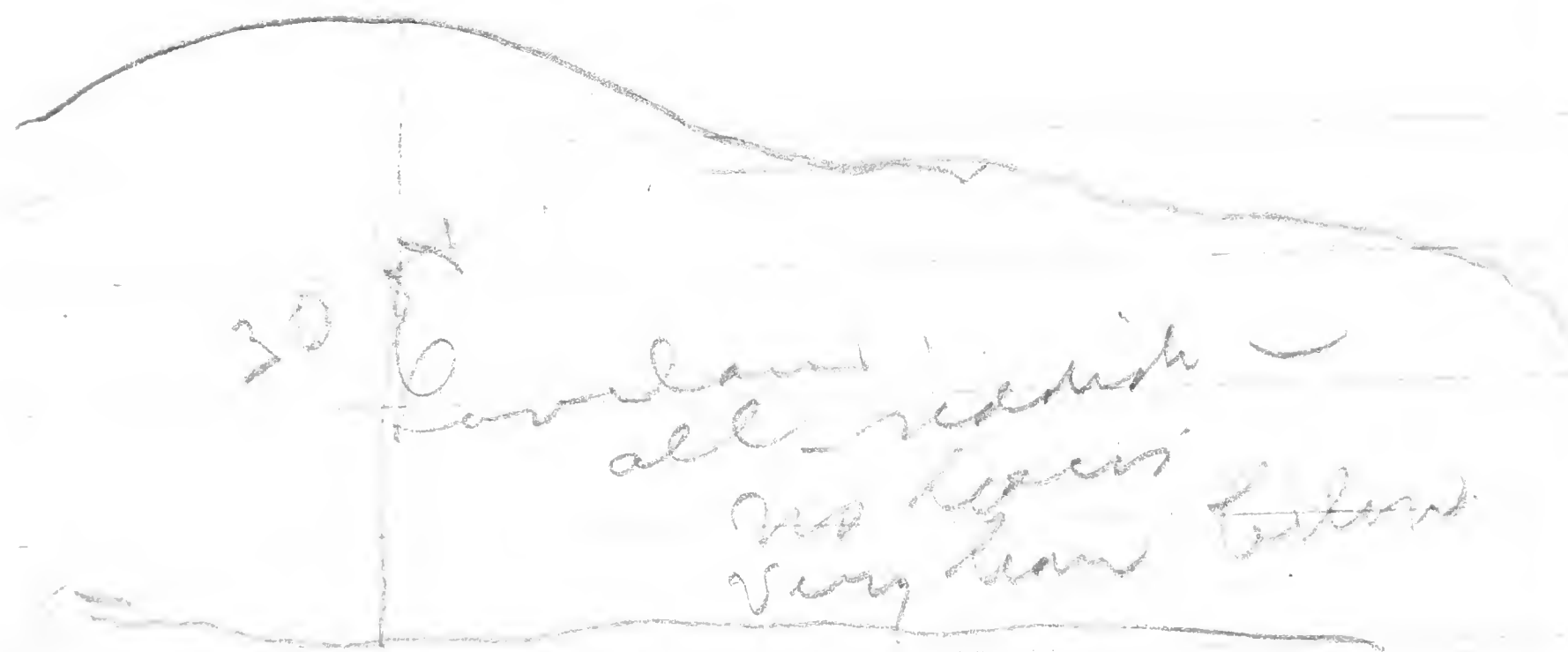
end d.



Talus

Offerman's

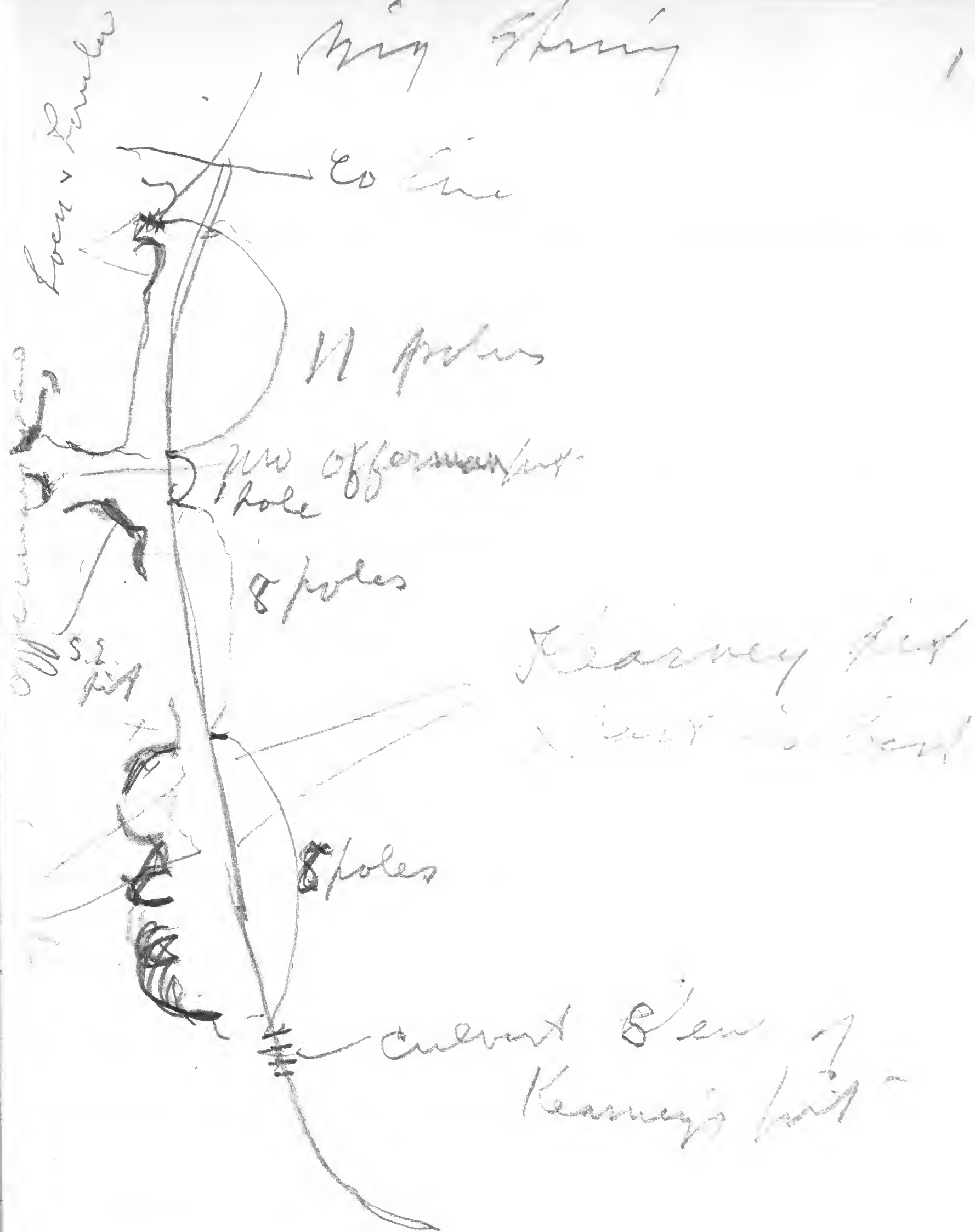
The S.E. pit shows about 8-15 ft. of sand.



Afternoon saw 7

cross-bedded with many fossils. The Afternoon about 1:30

High Spring



To left of T. in S.E. end (see p. 102) the same layer is much lower - including a slump.

Took photos of T. S.E. end

Loess
Offerman

At Offerman pit the
 sand & gravel (sand above
 & gravel below) in the
 NW. pit; the sand runs
 up to attitude —
 and is about 25 ft deep.
 The boulders are in
 lowest part of the
 Aftonian. Below the
 Aftonian the pre-Kanna
 appears, & they went
 into this, Mr. Offerman
 says, 16 ft.

Above the Aftonian there
 is about 8 ft of Loveland,
 & then about 8-12
 ft of lower bed.

A reddish band appears at top
 of Loveland — 1 ft thick
 top of Aftonian in NW
 = 1025, barometer
 28.79.

Bottom of sand is just about
 1000.

Mr. Fred Offerman
 212 N. 25th St
 So. Omaha.

From fragments of bone work
 & of debris imbedded in the
 S.E. pit.

1015 ft top of S.E. Aftonian
 28.79 — barometer.

0 0
Plots 5 & 6 show
 exposure (d)

The Kearney pit has
been worked for 25 yrs.
The first part of cut, at
x, shows

8-15 ft

Lovell
(reddish)

stratified sand

Coarser below & with
MnO₂ streaks - usually
more or less tilted, very

clearly cross-bedded.
No gravel, but sand
varies from coarse to
fine

altitude at base =

1015 ft. BM 2879

alt. of road top =
1050

The MnO₂ streaks &
bands are common in
lowest part.

In a gutter S. of the
pit (or in S. part of it)
a couple of feet of
pale brown clay at
level of R.R. switches.
Probably 2-3 ft above
main line R.R.

100 ft. farther S another
shows 5 ft exposure.
Some small boulders
& pebbles in this
exposure

at S. end of the great
pit (now partly abandoned)
the peckham is exposed
for 6 ft - its top
= 1010 ft.

Above this there are
beds of sandstone
gravel, & some
big boulders of greenish
& red sandstone
found in lower part
of pit.

28.13 Mar. on RR track
990 ft. " "

A board marks the
station Nelson.

Toward evening a little
wind storm swept up the
valley, and great clouds
of dust were raised,
notwithstanding the fact
that there had been a
heavy rain early in
the morning, and heavy
showers until about noon.
When the wind subsided
the dust soon settled.
On ^{nearby} all the ^{places} ~~places~~
examined today

Mr. Elder, with Mr.
John Gallatin (a gas
man) and Mr. Childs
after whose family
point below So. Omaha
was named, went
along, & took much
interest in study of

stata, All these men
have been at work
on mounds.

In S. East Offerman pit
Mr. Offerman found and
gave me a fragment of
what appears to be
a tooth of Elephas
imperator, and Mr. Child
found a fragment of horse
tooth.

Mr. Offerman agreed
to save all bones, teeth
etc.

Send him report on
afternoon gravels.

On my trip in 1890 I
saw numerous springs all
the way down the river,
these all probably come
from Aftonian.
Rained hard just after we returned.

Sept. 13 (Mon)
Left for Logan at
8⁰⁰ AM.

I had rained much in the
night, ^{Lester Adams is in E 1/2}
^{sec. 14 NW. of Logan.}
In the Book of Mormon
Book of Ether, Chapter IX.
p. 590.

"19. And they also had horses
and asses, and there were
elephants and camels, and
cunoms; all of which were
useful unto man, and more
especially the elephants, and
camels, and cunoms."

I found this in Book of
Mormon at the. The table
Office.
Went out to cemetery
& collected plants. Took
lunch, & went to see
the fossil pumpkin at the

coast land, evidently a hard
clay (criticisms) nodules.
Drove out to Harris grove
with Beckenbush.
Rained most of forenoon &
Thursdays all afternoon.

Went to sec. 3-7843.
to John Helle's gravel pit
this is on side hill, at
about normal elevation.
There was sand on top &
most of it is gravel.
Went into this about 5 ft
7 ft. - water at 6-7 ft.
from top of gravel.
This pit is about 30 feet
(estimated) above the
valley of Harris Grove
creek. It shows an
evident Kansan - bluish,
with white streaks, pebbles

etc., above, on a slope,

~~Kansan~~
gravel.

The gravel is not very
clean, being more or less mixed
the material exposed for 3
or 4 ft is mostly rather
fine gravel, & cross bedding
is not here distinct.
The gravel deeper down
is clean gravel, says Mr. Helle.
This is in all probability
Aftonian. Mr. Helle
never got through gravel
on account of stones.
Occasionally dark
streaks (Vander?)
Pockets of fine sand.
Found a piece of clam in
sand, probably from Aftonian.

Dr. Kennedy went with
Mr. Richardson to
Mr. J. D. Hornby's -
was rich, + postponed visit.
Dutton went to see
Dr. Weeks, a veterinary
surgeon. He has a lot
of mound material, - two
stone mortars, axes, etc.
gathered in the vicinity.
Rained pitchforks and
nail cuts all night.
Returned to Mo. Valley
+ went to hotel.

Sep. 14 (Tues)

Rained in morning, wrote
notes, letters, etc.
After dinner drove to
Callavins and got some broken
pottery, etc. Collected plants
on south ridge, + took photos.

Photos 1 & 2 - looking N. along
bluffs just above bridge
Photos 21 - same view of sta 4
Sta 4

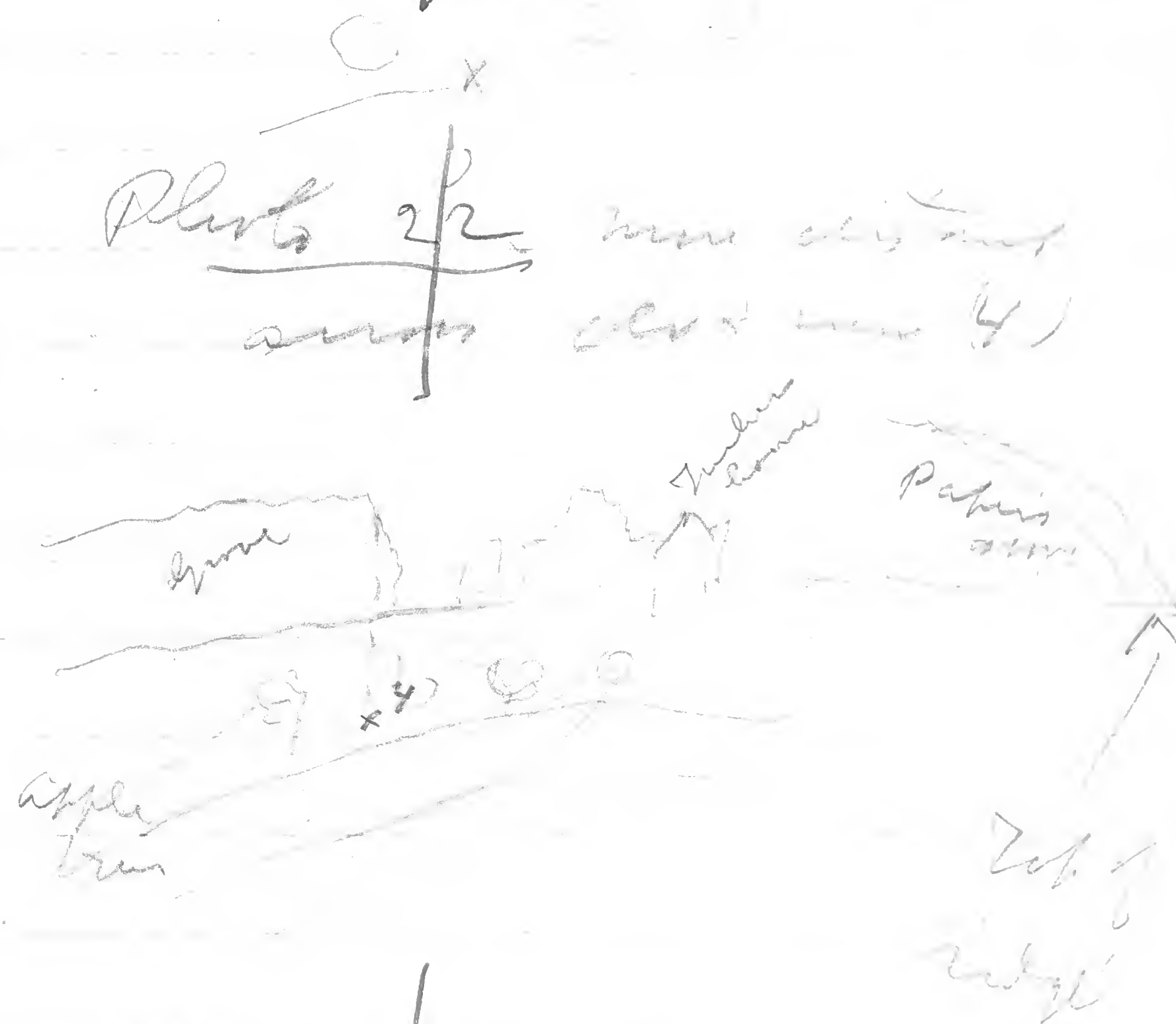


photo H - same.
Photos 3/3 + 3/4 - looking N. along
Photos 1 - View across sta. 1
to Callavins site.
Photos 11 & 12 - same with front
blurred out.

Photos 9 + 10 - Shum station
1 + 3



Drove to Cox's. Found
Mr. Cox not inclined to
part with his marston teeth.
Claude gave me a horse
tooth (fine), a shark's tooth
(from Abson shale?), and
another horse tooth.

Fine clear afternoon with
exceptionally clear air,
Wrote & packed in evening.

Sep. 15 (Wed.)

Packer & shipped small press
of plants.

Left for Woodbine at
8 am. A fine day
promised.

C.G. Kiefer - ^{sw. cr.} sec. 24-80-42
found buffalo skeleton ^(parts) in creek
near house - The skull is at
his house. - Was about 25
ft. deep. Also bull and woman
teeth.

On WW Little place in
SW 1/4 24-80-42 also
got shrew skull. A
hard pan was above it, says
Mr. Kiefer.

From ^{old} poor farm (between
Logan & Woodbine, east
a 1/4 mi. to old quarry
on E. side of river but
by it - east from bridge -

The bed of creek has
pebbles & boulders ^{sand} in
it. Above is brown yellow
clay on N. side road in
bed of NE 1/4 sec. 31 - 80-41
is quite deep & shows
bluish (gray) loess below, laminated,
with large round nodules.

Upper part yellow.

G.L. Mefford in sec 31 has a
sand pit - on S. side of
creek.

He has gone into sand about
10 ft. Changes to fine
gravel below.

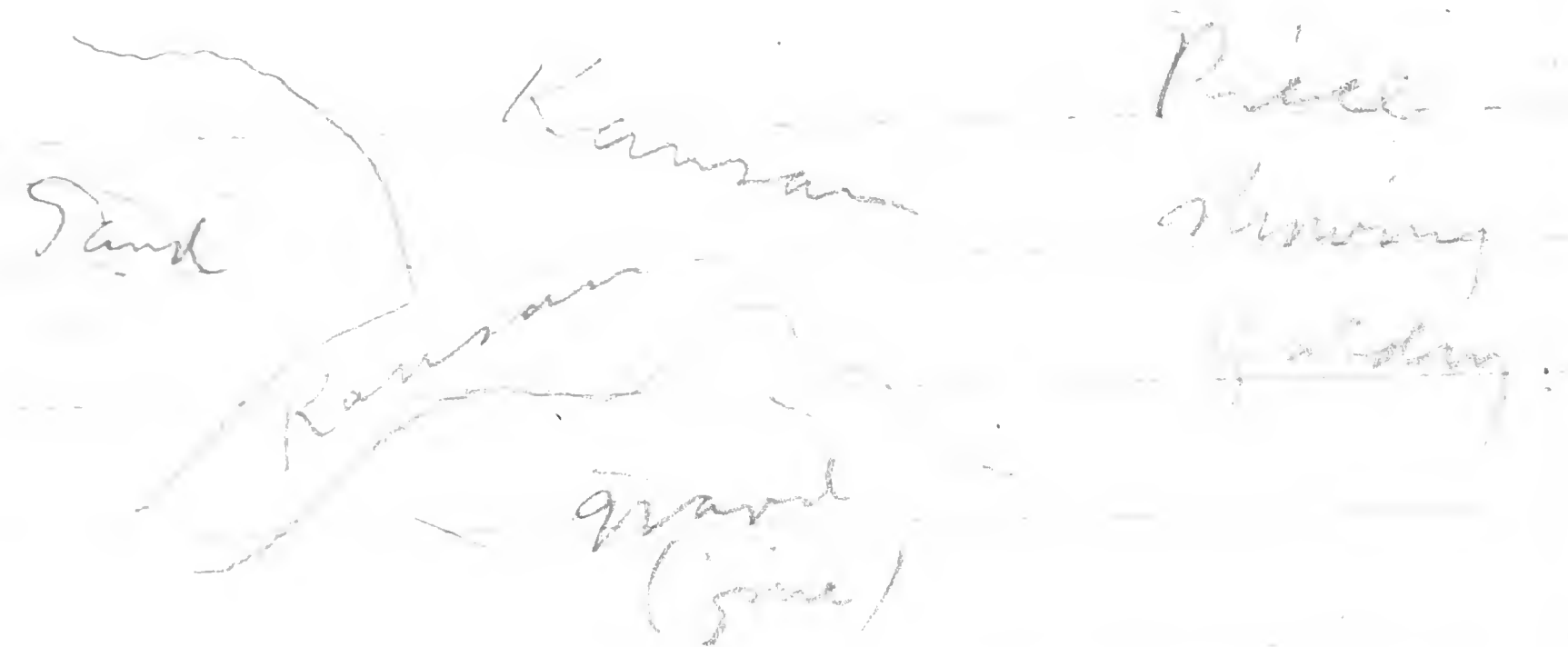
Between this & Kansan
there is a calcareous layer
as usual. The upper part
of sand is very.

Typical calcareous Kansan
muds from 3 to 8 ft. above
at.

119
The sand is brown-colored, the
upper part has thin streaks
& there are a few rotten
granite boulders.



A few rods further south
on same side of creek,
there is a high bank. 20 ft -
lower 6 ft shows pockets
of coarse sand & gravel,
with Kansan boulders
evidently a gorge.
There is more gravel here.



Mr. Bufford's well runs
to gravel for water.

All along creek (down) for
some distance sand &
gravel sticks out
all along.

The creek has a
narrow gulch, but
it is not in the alluvium.
At home - above creek
on bench 40 ft well -
went to gravel.

Lower well - barrow,
also on gravel.

Only oaks in 12 mi. zone are
bur oaks.

In sec. 29 Free Mead
has pit - with 10-12 ft. &
5-6 ft. of dirt above.

Sand light color & some gravel.

Water occurs in this.

Returned to Logan at 2 PM
& visited Mr. Crow.

He gave me notes on:

" Service southeast of Logan
R. H. Read's house well 70 ft.

to sand - NE $\frac{1}{4}$ NW $\frac{1}{4}$, 30-79-42

R. Hill's house well, 70 ft.

to sand - SE $\frac{1}{4}$ sec. 19-79-42

also copy of letter from
Div. Engineer C. W. R. R.

March 26, 1903

" Between Logan and
Mo. Valley, the Boyer
Valley falls about four
feet per mile and between
Mo. Valley and Boyer bridge,

about one and ~~one~~ tenth
feet per mile."

From Ill. Cent RR

May, 13, 1903

Total fall of Proyer Valley between
Dundlap and Woodbine is 32
feet, or an average of three
and 2 tenths (3.2) feet per mile.
Total between Woodbine & Logan
is 25 fts, or an average of 3
feet per mile.

West of Logan the average slope
of the Proyer Valley is about
two and 8 tenths (2.8)

The distances are in direct line
not following windings.

In Mr. Smith's history -
should be 10 houses
instead of 12, and they
are exaggerated in size

Ottumwa history 2000.

Mr. Chas. Lamb in
Raylan Exp. (Woodbine
is P.O.)

Mr. Crow says that
Lem Mufford and
Mr. Pugsley of Corvallis
killed East Buffalo -
(see Co. report)

Letter ^{slightly} Adams tooth was
near middle of current on
E side (& hence N. of
stone wall) Lay on top
of lime rock, in gravel.
This was collected in fall
of 1902.

(Ask Mr. Crow about
copper knife blade near
Logan.)

Got forth from Lester Adams.
Returned to West Valley.

Sep. 16 (Th.) 1909

Packed, etc. in morning.

Left for Council Bluffs at
8:40 am.

Arrived N. at 9:30 am.

At 8th st & L Ave., S.E. of
intersection, is a great local
bank at bridge end.

Men say that there is a harder
whitish joint clay below.

Observe this (1).

Next bridge above (2)

Exp. 3 is in side of bluff

& down to nearly level of

road there runs a

whitish compact layer (sandy)

(not common) with many fossils.

At 6 ft. is a red band

6-8 in, strongly oxidized.

running & it are vertical
modules (see spec.)

Above this layer is yellow
(~~or sample~~) but not just
a mass of harder stuff
(consolidated by seepage from
above?) (see sample)

Cut 3 is about 250 yds n. of
angle in road.

The shells are mostly
crushed, & it is probably
that this is a slump.

Cut 4 is a small layer,
fossil, cut, about 150 yds
n. of (3).

Cut (4) is a deep cut
(certainly ^{about} 50 ft). It shows
no sand or gravel.

It is 100 yds long
with fossils, & sample of loam
about ^{35'} ft below top
of bank. The lower part

loam is heavy, grayish, & shows lamination & water lines (latter former after deposition?)

Oxidation streaks & patches appear on the lower part. Upward it becomes yellowish but there seem to be no sharp lines.

Most of the shells were taken from the steeper part, but I dug in & found several, &

saw others projecting from face. This seems to be in lower part only. The

shells evidently came from the lower part of Kansan.

The source of stamping looks clear. Photos 4/1 & 4/2 - looking E. of U. at cut 4 & cut 5 shows low back ground.

Cut (5) shows, especially at N. end, a lot of post Kansan gray loam with horizontal streaks & clumping & fossils.

The other part is stained rusty for 4 or 5 ft, & fossils extend through this as well.

Above it the loam looks very compact, but upward it becomes soft and yellow as shown in deeper masses.

It is about 20 ft to top of Post Kansan (rich of staining layers) from 2 above RR track.

Bluff is about 50 ft high & 100 yds long. It extends along road to point where road & RR begin to diverge -

Cut 6 - is low down - its base
about level with RR &
rises only 6-8 ft. It is
loamlike, fine-grained, heavy,
but friable, & evidently
my old alluvial deposit
~~fall of shells~~ ^{many} shells. See shells
& sample of clay.

At 7, there is a great
cut excavated in hill.

and a couple of
shiny gold sized things
run out. The
pebbles, etc. in
little creek S.
indicate that Aftonian
is not far

Cut 8 -
About 200 yds N. is
a low cut which shows
a couple of feet of blue-
black soil Aftonian on E.

side RR. Water runs out
all along here, & there are
small springs and streamlets
running out.

Also all along are my alluvial(?)
shells - heavy & many.

This cut is just ^{at} ~~not exactly at~~ ^{this is just at} ~~lower~~ 1075 ³⁸⁶

Here above the soil Aftonian
there are streaks & layers
of gravel - evidently Aftonian
& above that what appears
to be Kansan & post Kansan
loam. This part is heavy
& slipping & dirty & in it are
all shells, some small, &
& 1. These shells to be from
of our living.

Is this the way my alluvial
branches were formed?
Calcium nodules are
plentiful.

A spring runs from somewhat higher point just N. of culvert, showing that run, stuff above Sublathian probably shipped

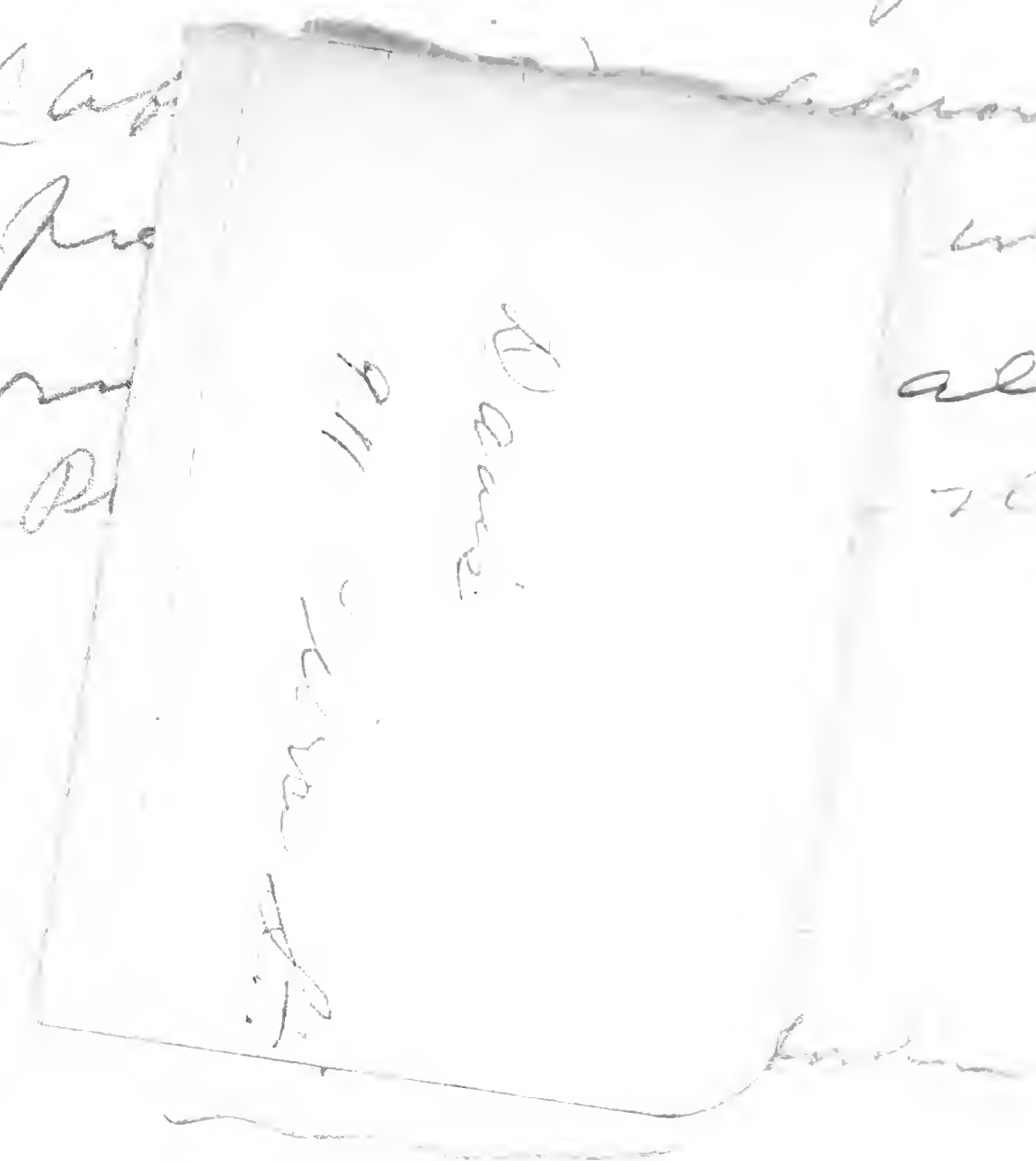
Cut 9 at the next culvert, about 200 yds N. the sublathian rises at least 7 feet above RR., & everywhere water runs out from above it.

This is typical blue black pre-Kansan, with scattered pebbles & small boulders in it. This is a fine exposure of pre-Kansan - shows more or less clearly for 100 yds or more, - both sides of culvert. Took sample of pre-Kansan from cut 9

I could see some pebbles above pre-Kansan

This cut is about 50 yds S. of switch tower 386

at the upper end of this cut about 2 ft. of sand (Cap. ... above water is all along ...



bottom

pre-Kansan

Photo 15 & 16 - looking SE along same bank
310 32 would be at near end.

1. 6. 1911

9. 11. 1911

A spring runs from somewhat
higher point just N. of
culvert, showing that
my staff above Substation
probably slipped

Cut 9 at the next culvert, about
200 yds N. the outcrop
rises at least 7 feet above
RR., & everywhere water
runs out from above it.

This is typical blue black
pre-Kansan, with scattered
pebbles & small boulders in
it. This is a fine exposure
of pre-Kansan - shows more
or less clearly for 100 yds
at once, on both sides of culvert.
Took sample of pre-Kansan from
Cut 9

I could see sand pockets
above pre-Kansan

This cut is about 50 yds
S. of switch tower 386

at the upper end of this
cut about 2 ft. of sand
(astorian) above above
pre-Kansan, & water is
running out all along.
Photos 31 & 32 show this

Kansan below
water

pre-Kansan
RR
Photos 15 & 16 - looking SE
along same bank
31 & 32 would be at near end.

A hundred feet further
N. the aftonian gravels
form properly conglomerate
the second culvert
above, with brown wash
1070, has cut which
shows. Aftonian gravel (with
water) & above that blue
Kamman, & then reddish
(Lowland). - cut 10
This is still quite across
S. of E. end of lake (Dove Lake)

This is really a whole chain
of exposures forming a series
10, 9, 8, etc. - all practically
continuous.

At 10 the subafluvial
rises at least 12-14 ft
above RR, & the
aftonian, both sand &
gravel, above is

(This makes it about 15-16 ft. 133
to bottom of gutter)

more or less conglomerate,
but water flows out everywhere.

In some places Kamman
shows distinctly above, in
others it is a sort of
Lowland. (slightly Lowland)

A little ways north - in N.
part of 10 - the subafluvial
rises 12+ above RR, then
a hard column layer, 1 ft
thick, then more or less
conglomerate gravel about 7
ft, then consolidated (sandstone)
sand, about 5 ft. - above

indistinct - but probably
Lowland. (See later photo with
Calvin + Mearns)

This kind of exposure extends
more than 50 yds, nearly
to culvert 1069.

Photos 7 + 8 - cut 11 -
looking E. of N.

cut II is just opposite
the mile post marker CL
348 (Clinton) Is is 4 miles to C. B. Bldg.
The consolidated cross-bedded
conglomerates are 5-8 ft
in some thickness, & weather
to form bipyramidal plates,
with lower sand
beds.

Photos 19, 20

constant
water
Pre-Karnian
RR

Lower
marker

Carboniferous
80-100 ft local
very fossiliferous

Leds of
Aptian conglomerate
lower sand

Pre-Karnian

RR

N.

S. end of cut II

Photos 28 & 29 show N.
end of pit above 4 mi. past
cut 11, (past)

5/21 conglomerate
(at 1000 ft)
11/21 Rusty granite (granite boulder 3+ ft across)
water water
Pore Kanon

10/21
slumped
Pore Kanon

RR

Photos 29 & 30 show
same with little more
exposed

At S. end the Gubann
leaves, full of
shells, is 10-12 ft
thick, & over at some

The Pore Kanon here is very
distinct, - has a few pebbles
& small boulders, nearly
all dark.

Just above about 1066 &
S. of switch tower 384
(just between them) is
exposure 12, which is
similar to 11, shows cross-
bedded conglomerate, rusty
iron, water, & all
of all. -

Exposure 13 - is a small exposure
just N. of 12, shows at some
conglomerate bed rising to north
(or dropping to south, rather)

Ex 14 - is at the great
pit just above N. end of
tower cable.

Here in cut back, 25 or
30 ft. of Lavelle is exposed (&
near top of bank row of rocks

show that loam begins, &
then rises back)

Below this is sand, probably
15 ft, shown poorly because
of slump.

Down on level of entrance
a few slabs of
conglomerate, & in outer
bank next to RR. The
pre-Kuman shows as
before.

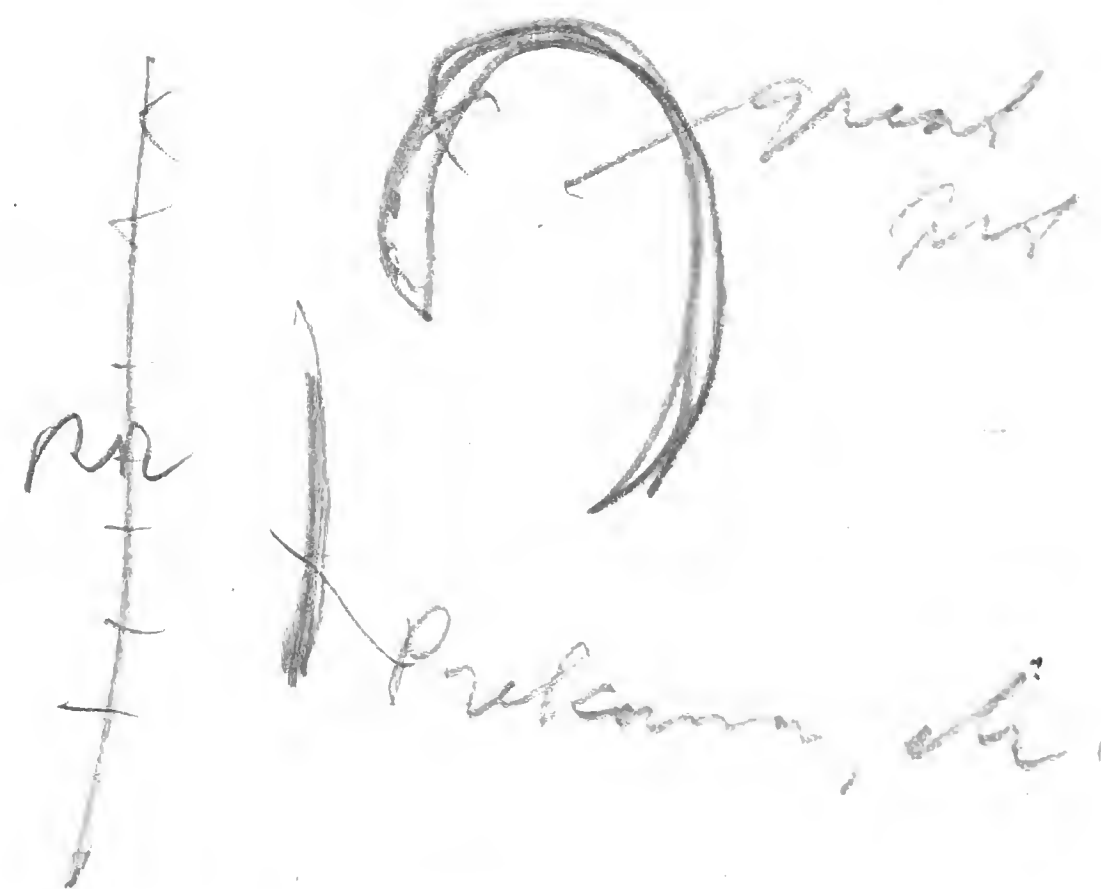
Photo 5 shows part of
inner bank

low
order

Lowland

valley mostly
over van

Exp. 14 should be just
S. of ^{N.} end of lake - I have
pushed there up too far.
The apterium is conglomerate
for 4 - 5 ft as near in
bank next to RR. The
finer sand in great pit
is higher (15 ft)



Its N. end is just off
route over D 393

It is about 1050 ft
from great pit to culvert
at N. end of lake (uppermost
point) and about 1100
ft to beginning of curve N.
It is 500 ft more to culvert
1055,

all along the banks or
rather a continuous steep
bluff N. of great pit
to the 1500 ft. point
(culvert 1055) there
are occasional outcroppings
below of sub-Aptian,
& a few. The
level is here very high.

Photo 6. look N. at
bluff

Culvert 1054 is 500 farther
on & 200 ft. farther N.
the hill photographs are

Photo 6 begins.
This is at tower 38 & looking
N. or 391 looking S.
(Two towers together.)

The big bluff then extends
for 1700 ft. It shows
pre-Kanran, at least 12-
15 ft in places, & above is
a belt of gravel & Kanran
above this with some
up.

At 1200 is culvert 1052
The 1700 ft point is
4 or 500 ft across gravel
curve to E.

Sub-Aptian shows at
intervals all along.
At 1700 there is a break
then (from end of 1700) for 2000
ft more the bluffs are
broken & interrupted & shrunken.

but they have few Kauna
& spring all along.

This is well across and,
at beginning of straight
stretch N., & is at
tower D, 391 (looking S)

and elevation 1050.

Much alluvial sand with
shells all along.

Then for 4800 to
tower 382 looking N. or
tower 389 looking S (elevation
1033) the bluffs are

broken, sometimes nearly

knives & overgrown

but spring show &

occasionally (rarely)

subaqueous

This must be near the top-
line:

at 2600 add to
above is 3/4 mile

Just. Bluffs broken &
overgrown

Add 400 = water road crossing

Add 1800 = there are
low outcroppings of white
limestone (Morrison)

(To Crescent add about
2600 +)

Saw one car hit about
1/2 way between Honey Creek
& Loveland (from train) &
one about 1/2 mi. S. of
Loveland.

Reached Mo. Valley & ran
a couple of miles N.
along bluffs.

Packed in evening, and
retired late.

Sep. 17 - (Fri.) 1909

Left Mrs. Valley at about
6+ AM. for Turin.

Met Dr. H. E. Douglas
Onawa, Ia

Has foetus - 175 day of pregnancy.

Went to Turin & met

Mr. W. E. Babcock.

He has Mastodon teeth,
& a lot of other bones, obtained
10-12 ft. below top of sand,
in a gravelly layer.
Left at 10 P for Whitney.

Visited Coyne grove (old
Whitney homestead)

Found following plants

Mostly of grove soft maple,

Some am. elm, Hackberry,

White pine, & box elder.

Sycamore;

Hornbeam

Quercus

145

Vitis vulpina

Xanthoxylum am
Common -

Ribes cereum

also following:

Eupatorium rugosum - very common

Prenanthes - (blue) not common

Dracopis - not rare.

Urtica dioica - common.

Plantago - scattered.

Lonicera caerulea - common

Lappula
Echinops - not rare

Galium aparine - " "

Actium - not common

(see plants)

Photos 3 & 4 - Deep woods -
Coyne grove.

Photos 9, 10, Whitney school.

Photo 11 - Turin N. from Coyne grove.

N. = soft maple.

E = Box elder

Photo $\frac{2}{2}$ = narrow stand (right)
American pine (left)

Photos $\frac{2}{9}$ & $\frac{3}{30}$ - walnuts on
N. side of road E. of
cemetery S. of Cozine's
4-8 in diam.

Photos $\frac{2}{5}$ & $\frac{2}{6}$ - Looking N.
On W. side is N. & S. row of
walnuts. To east of road about
25 ft, then about 15 ft
bare, & then about
for 20 ft. corn is smaller,
growing taller eastward. It
may also be wetter, flatter
here.

Corn N. of E. & W. row is
30 ft N. of trunks &
crown extends 18 ft.

Corn scarcely smaller in
1st row.

These walnuts are 6-10 in
diam & 60 or more ft. high

Photos $\frac{1}{2}$ & $\frac{2}{2}$ - Looking E. along
road S. of Cozine's
Cottonwoods on south side
& walnuts on north. At
E. end of walnuts, extending
along their S. side is also
row of big willow woods.

Photos $\frac{D}{D}$ & $\frac{D}{D}$ - young walnut
grove (diam = $2\frac{1}{2}$ - 4 in)
S. of Cozine's on E. side of
road. Two dense.

Photos $\frac{4}{1}$ & $\frac{4}{2}$ - Looking N.
From turn in road E. side
S. of Cozine's

On left = box of corn

On right = soft mud.

Returns, took supper &
left at 5:53 PM. for
Cedar Rapids

Reached Cedar Rapids at about
2:05 AM, & met John Hurty &

wife at depot. Her brother
at Omaha died & they left
at 4 am. Had quite a
chat with John over convention
affairs.

Left at 5 am for home.

149

Sep. 25, 1909 (Saturday)
Left Iowa City at 5:10 am
for Muscatine & Burlington, -
with L. A. Giddings.

We walked to E. & W. road just
N. of S. end of sand mound,
& collected plants on the
sandy flats in both
Muscatine & Linn counties.

Traced county line exactly
this time, & found that all
that territory to fence just
N. of Salix humulus
slope, is in Linn co.

This puts the blow-holes on
west-side (with box elder, plum,
stilts, etc., - all in
Linn co.

Also the great blow holes
on W. side, including
flame with honey locust,
& area covered with

Zephronia which I had previously
photographed. The fence
near S. end of Timbered Trip
is ~~in~~ county line.

Top photo of melon patch.
Also of prairie slope on
W. side of sand mound.

The soil is everywhere loose
sand, & at middle of slope
small pebbles are not
uncommon. Also saw
union shells (bleached) at
several points, but near
farm house, & it is possible
children carried them here.

Found plants grouped in
interesting manner.

Thus at S. end of W. slope
Monarda fistulosa (now old)
was very common; so was
Solidago (scabrous) now

nearly through. Solidago rigida
was quite common, & Parian
capitata, P. scaberrimum, & a
fine "Stipa like" grass were
very common. Brilliant oligostachya
was not rare.

Northward, N. of farmhouse
on N. slope & at top near
N. edge Leontis scariosa
was exceedingly common, mostly
through flowering. On the
entirely flat on top
Artemisia was exceedingly
common - covers large area.
Leontis cylindrica, now
through, was quite common.
Both Solidago again
very common.

Still farther N., toward
County line, Monarda etc
again more common &

fewer *Liatris* & *Solidago*.
Graphalium polycephalum
 is very common, - more
 common in patches.

Lephoria, *Physotomys*, *Rhus*
trilobata, *Antennaria*
plantaginifolia & more
 rarely *Dioica*, *Bouillon*
origanacea, etc. occur in
 patches or families.

There are occasional clumps
 of *Ceanothus*, *Salix humilis*
 (northward toward co. line), &

^{some} *Lactuca* (also chiefly
 northward,

Ceanothus is everywhere
 common.

Lephoria, *Stipa* like fine
 grass, etc. predominate
 N.E. toward flow holes.

Took photos of dunes
 & honey locusts, then

started by exposure.

Found *Lobelia cardinalis*
 & some *sylvestris*, common
 in timber sheltered
 belt on N.E. side.
 Took photo of *Ptelea*
trilobata at N. end
 of sand mound.

Walked back to
 Millard, (collected much
Croton in flower on
 N.W. slope of sand
 mound, also *Solanum*
viggin in timber belt.)
 Took lunch in little lunch
 room, and at 8:15 P.M.

Left for Columbus Jc.
 at 10:28 for West Licking
 at 11:28 for Iowa City

65
5.66
13
644
200

Feb. 10, 1910 -

Hack, Iowa City	.25
Prover, lantern	.35
RR to Cedar Rapids	.65
Dray " "	.25
RR to Turin ^{Donna} Ia.	5.66
Sleeper	1.50
RR to Turin	.13 ⁺
Lunch ²⁵ Supper ³⁵ 35	.95
RR to Mo. Valley ⁵⁰	.91
Hotel Mo. Valley check ¹⁰	.60
Plates " "	.50
RR to Co. Bluff ⁴³ Carfare ¹⁵	.58
Apples ¹⁰ Paper ⁵ Corn ¹⁰	.25
milk ¹⁰	.25
[Trip to Iowa City ⁵⁸ , Lunch ⁴⁵	1.33
RR to Turin	.88
RR Co. Bluff to Iowa City	5.66

Feb. 10, 1910

Started at 9:30 PM for C. Rapids
Took train (C. Mo) at C. R.
for Turin.

Feb. 11, 1910

Left just before midnight for
Turin. Turin at 7 AM. &
after waiting for changing
of car, left at about 11
AM for Sioux City.
Reached Sioux City at 1 PM &
went to High School.

From principal Cole.
also Mr. French, Mr. Beck.
From the teacher's meeting
would be held Wed. 9, 10 & 11
Left at 5 PM for
Turin, which I reached at
6:22 AM.

Set up lantern & ...
on Reservoir of ...
Spent night with Mr. Bisbee

who is Mr. Babcock's prospective
father in law.

Met Feb. 12, 1910.

N. J. Bristow -

Castana, Ia R. F. D. no. 1.
Wants pictures of Belvedere bench

wants a $\frac{1}{2}$ doz. showing
wheat field.

Secured bones teeth from Babcock.

G. E. McMaster -

Liconic, Ia. -

Has hills, etc. in place with
corn.

Talked to farmers in afternoon
on conservation.

Had taken trip into hills
Mr. & got a series of pictures.

Left at 4:45 P.M. for
Oswawa, Met C. G. Oliver
& went to his father
Judge Addison Oliver,
an old settler.

Had a pleasant chat
with him,

Judge Addison Oliver
Planted 1500 bushels of
walnuts -

Commenced before 1890 (or
about 1890)

Planted in and over land
 $\frac{3}{4}$ mi. square - In which
was forest of cottonwood,
maple, elm. Some green
ash. Native forest cut
over by RR. After
being cut over much ash
came up.

When trees were young 1 &
3 yrs. old. Fruits came
in from then tall
as man did not pick
only low ones. In early
90's.

also planted many kinds
of black locust, Russian
mulberry & Catalpa. The

latter all ~~young~~ ^{dry} -
 out. Many black locusts
 are left - 6 in diam. &
 40 ft. high. Short rapid
 growth of harder trees.
 Trees were not cultivated.
 White black locust when
 in shade, is good for
 Russian millwork - some left,
 but also grows where
 not cultivated. But many
 left. Some cuttings held
 out. Some pretty well
 in last 3 or 4 yrs. Some
 6 in diam & 30-40 ft. high.
 Sec. 17 & 18 - in this trip
 (Gannon)

Was covered with ash (young)
 when he brought it.
 People cut saplings for
 fence posts & wood.

Soil is not light, - some of
 it like gumbo.
 In drained areas better.
 Old bottom on the river.
 And also some maple.
 Some ash over 16 in in diam.
 came here in 858,
 Name Gannon -

Mosona in Gannon's
 A man from there, in
 legislation - & he suggests
 name.
 No water power now and in
 Mosona.

5 mi. SE of Tipton is the
 home he has just sold and
 about 50 acres - walnut
 & chestnut - also some
 a lot of ash.

Also single rows - mostly
 walnut - not well cared
 for. Firs sometimes.

In low places here -
Pines cut, not tall,
then later in strips 5
rods wide, N. & S. 2 mi.
long, then 3 strips E &
W, $\frac{1}{2}$ mi long, rather -
then 1 strip 5 rods wide
across section diagonally -
all S.E. of town
all walnuts -
Varied -
then interplanted with
nearly all of them, very
alternate row - with
diamond willows -
Willows did better on
low land, - finely -
Willows have been cut
out several times for
temporary huts, for
wood (finest kind).

161
Accidents - fires -
mostly where where burned.
Overflow of Missouri has
done little harm. Not
frequent & in spring
of year. Could raise
crop. Only 4 $\frac{1}{2}$ years since 1857,
In March or April.
Flows probably caused by
ice dams
Little grain - out every
month in the year -
particularly in March
& spring & summer
Maple flows come down
fast - 3-7 days -
Ever down.
Mr. Henry Harlow
Mayor of Osage
Artisan well -

Visited Mr. Vincent-
Lewis & Clark land

4 camps in Co. - Aug. 8,
9, 10, 11, 1804 -

All on river.
3 still well marked -

History of the Expedition
under the command of
Lewis and Clark
Elliot & Cones
in 4 vols.

Pub. by Francis P. Harper
1893

re. I
Camp - Aug. 5 - Harmon p. 67
" 6 - " p. 68
" 7 - " p. 69
Monmouth - " 8 - pp. 69-70
" 9 - p. 70-71 -
" 10 - p. 71.
" 11 - pp. 71-2

C. G. Oliver

Onawa, Ia

Worked supper at his house.
His wife is a sister of
Bernard Davis, my
pharmacist. They were
old settlers here.

Visited Parker Holbrook at Library
The Library is in a fine
building, largely gift of
Judge Addison Oliver.

Left Onawa at 8³⁰ PM
& went to Minn. Valley.
Bought box of plants at
Brown's & turned in.
Feb 13, 1910

Left for Co. Bluffs at
7 AM. Called up
Mr. Raymond Wilson, & he
joined me with Mr. Fitch,

the mammal training teacher
We went to So. Omaha,

So. Omaha

photo

29-30 - Lusk & Co. photo

work along & big river.

We went S. along CB & Al
R.R. as far as Officerman
pit. This was badly
shumped & snow interbed.
Returns to Council Bluffs &
went to Fairmount Park
where I took a series of
pictures showing trees &
snow.

Then we walked north along
C. NW. R.R. to Afton
conglomerate. Took photos.
Water even grew in springs
both here & at So. Omaha.

165

The first big pit with spring
above Co Bluffs belongs
to Co Oper's.

Harry Cooper - 125 Fairmount
Co Bluffs.

has four bones. Note
to him

There are also bones in
the Council Bluffs High
School & Wilson is to
get information about
them

Left Co. Bluffs at 6:³⁰
P.M. for Iowa City

Missouri Valley - Mich. 12-1910

Attended N.W. Karlov's train
meeting at Sioux City yesterday
& came here last night.

Met Mr. Watters, & obtained
profile.

Mr. Watters showed me
profiles. They show that
Sediment has built up
dikes.

He says the low ground
at bluffs is 5-6 ft.
lower than benches of Missouri.

Mich. 11. Went out with French
at Sioux City - to golf club
looks at N.W. of Pine, &
(Jackson?) street can find
chipped Cretaceous (Morrison
bed) half way up a slope.

on N. side of creek. There are
boulders & pebbles here, & probably a
sand pit on top of rock.
older yellow loess shows in cut.

167

1/2 mi ahead
1 mi. S. of Mondakia, 1/4 mile -
bank no. - 52.7. 50.8, 56.3, 61.3
60, 65.5 54.0 57.2 60.7 59.6 60.4
56.3 57.9, 58.5 57.7 58.1
59.3 64.5, 64.0 62.3 59.9
60.2 (RR) 59.6 58.5 58.4
57.8, 57.5 56.9 57.7, 57.9 | 63.0
58.9 (57.9) 56.1 55.7 55.5 ^{50.0}
58.4 65.5 ^{60.0}

This is on a line
(though outside) just 1 mi S.
of railroad line running
through Mondakia.
Mr. Watters called attention
to the fact that when the
rivers break over these dikes
they flood large areas.
The RR. grade from Mo. Valley
to near Missouri (before said is
reached) is ~~about~~ a dead level.
This was surveyed by Mr. Watters,

Stopped to see Mr. Chas.
Smith the brick man.

He says brickyard at
Dunlap —

Woodbine - Canfield & Young
- Van Scoy

Logan - Van Scoy?

Mr. Valley - Chas Smith

Home in Warren co.

Have sold 10 to 12 hundred thousand
a year. Burned one last year.

Is now again burning.

Seems less, but he thinks cement
did not hurt much.

In his lot - 90-100 ft clay, of
than not more than 10 ft. post
Kansan. Then some leveler

could see 2 or 3 ft, but at
I think some south much

more. (also north) & below
that about 90 ft. of Kansan
(I could see 10-12 ft)

Then they strike sand (Aftonian?)

This is in fossils.

He says blue & yellow sand.

Varied Colours

At N. end of road, exposure

over black layer. There are about
1-2 ft. of dark fine silty

stuff with shales (I am
quite sure this belongs with
MnO₂, & is very silty)

Above that, sharply set off,

is a mass - 8 ft + of
yellow stuff, sand-like, but
heavy with a few shales,

& it doesn't look just like
loam in texture, cleavage, etc.

The spring indicates that

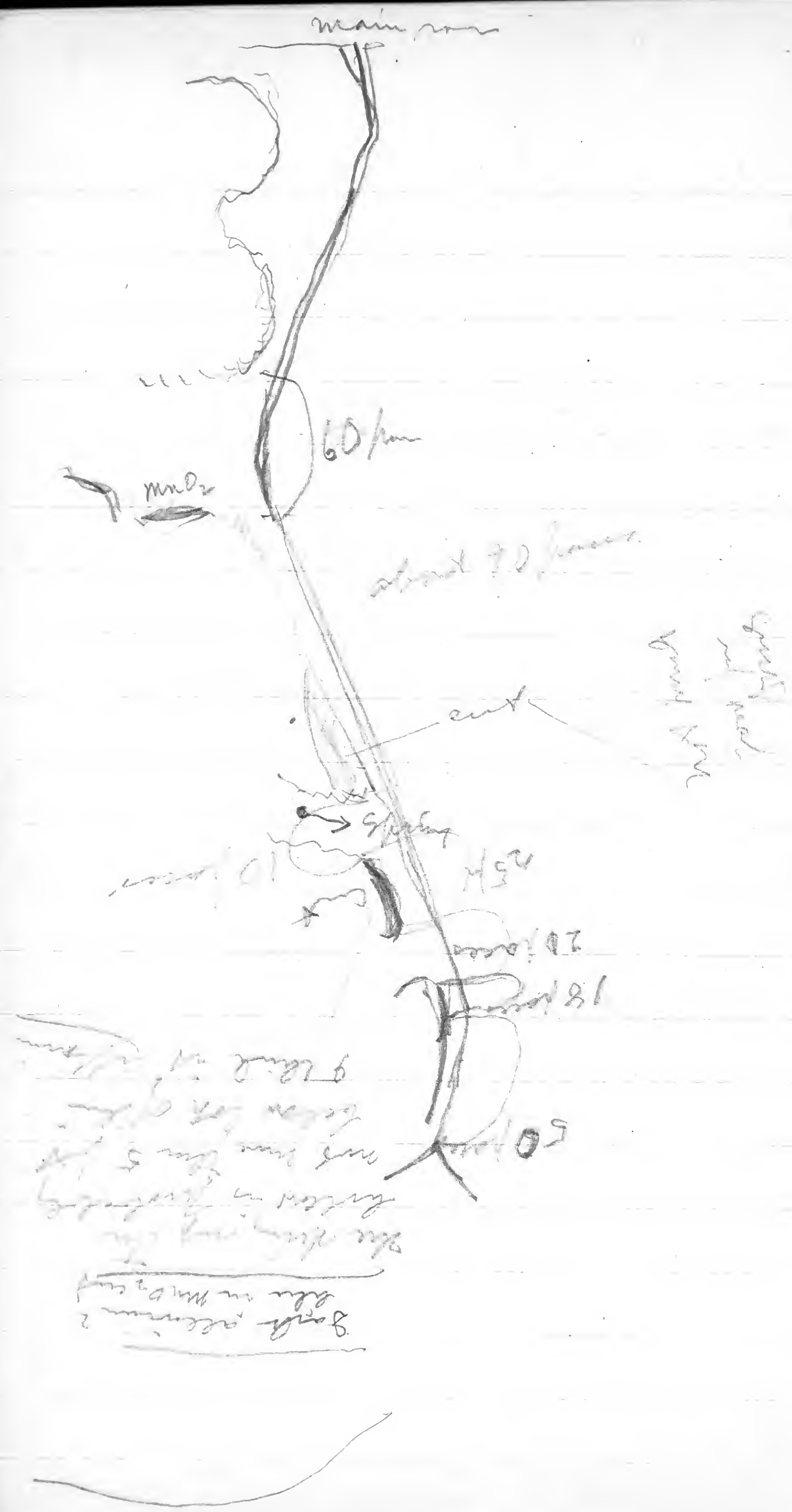
Aftonian is not far away

Synsphaerium obicordatum is
common in somewhat open places

in Spring Hill
There is a spring ^{up the valley} about 1/2 mi. N. of Spring Hill

Nichols Bros. cement works
 New Valley
 Newton co - The above
 concern.
 Took 12 photos - 4 (2 views)
 of hill with mound at
 Culavins, 4 views (334 maps)
 from top of pt. above Ches.
 Smith's brickyard, looking
 up bluff, and 4 (2
 different views of cut 66)
 The big Smith cut

Left for Logan at 1:15 PM.



Reached Logan at 2 PM.
Mr. Peckenhough & Mr. McCabe
Sr. were not in town.

A fine bright day.

J. E. Sprinkle (~~Sprinkle & Sons~~)

N. W. Goodman -

Cement at Logan.

Sprinkle Bros -

Dunlap - no bridge -

+ even cement works given up

though stock on hand.

Went up to Chas. R. Crow's.

From that hill rise from
90 to 120 ft. above terrace.

I measured from NW. cor. of
Court House grounds, & from
rise of 5 ft. to foot of hill.

1 block N., on road to Crow's.

Then it is 90 ft. to top of
hill just beyond turn in road,

& the road then rises still
higher, & at Crow's it is 120 ft.

The cedar log on Mr.
Locklin's place in gulch
was down in blue clay about
40 ft. down in gulch -
in S.E. 1/4 sec. 7 - in S.W.
cor. of horizontal tropic.
Mr. Locklin daughter says
there is some above the
blue clay in which
log was found.

Expenses - Sioux City Trip

Mch. 10 - Fare to Cedar Rapids	.50
Cab ²⁵ - Fare to Sioux City ^{6.41}	6.66
Sleeper 1.50 Porter ²⁵	1.75
Mch. 11. Breakfast en route	.50
Dinner, Sioux City	.75
Lunch " "	.15
* Fare to Miami Valley -	1.
Mch. 12. Hotel Allen -	1.50
Fare to Logan -	.17
Fare to Cedar Rapids	4.
Fare to West Liberty	.73
Fare to Sioux City -	.32

Account - Aug. 1909

Aug. 21. Orleans & Subby 5.72
 Transfer Subby .25
 Supper - Windsor 50
 Aug. 22. Lodging " 50
 RR. to Sioux Cy. - 1.47
 Breakfast " " (restaurant) .30
 RR. to Mo. Valley 1.52
 Hotel Miller - Dinner & sup. ^{lodging} 1.00
 Team to Logan & return 1.50
 Aug. 23. RR. to Cedar Rapids 4.84
 (RR. to Iowa City .50
 Breakfast RR restaurant .30
 Aug. 25. RR. to Cedar Rapids .50
 Cab. .25
 RR. to Mo. Valley 4.89
 Aug. 26. Breakfast - Miller hotel .50
 Express - 3 barrels 1.20
 Transfer to Logan .25
 RR. to Logan .17
 C.F. Peckham - Team & buggy 1.50
 Lodging - Miller hotel 50
 Transfer (buses) 20
 (17.

Aug. 27. Breakfast - Miller hotel 50
 Lunch - Lumberman .40
 P.E. Robinson - Team & buggy 2.00
 Supper. Miller Hotel .50
 Transfer material .15
 (RR. to Cedar Rapids 4.89
 Breakfast 25 RR. to Iowa City ⁵⁰
 RR. to Carroll C. M. 1.42
 RR. to Mason Cy C. M. 2.38
 Dinner ^{at} McBride 25
 Sep. 2. Supper McBride 25
 " 3. Breakfast, dinner, supper 1.75
 " 4. Breakfast McBride - 25
 Team - field work 2.50
 RR. to Iowa C. M. 3.38
 " Picnic to Iowa (25
 2 supper, Lumberman .25
 " 4 Lodging Hotel Iowa .40
 " 5. Breakfast " .35
 RR. to Akron 1.18
 Pitkin .25
 Dinner at C. M. restaurant 1.30
 Sep. 5. (supper ⁵⁰ Lodging ⁵⁰ New Kendell ^{1.00} 3.50
 " 6. Breakfast, dinner, supper ⁵⁰ 2.00
 Sep. 7. Lodging ⁵⁰ Breakfast ⁵⁰ .50

Sep. 7. RR. Chalmers, bike	13 25	38
RR. to Sioux City		1.07
Mike " "		.25
Lunch - (noon)		.25
Supper - West Hotel Cafe		55
Room " "		1.00
Sep 8 - 2 day plates Zimmerman Mrs.		1.00
Breakfast - West Hotel		35
RR. to Sargent's Bluff		1.15
Lunch - restaurant Sargent's Bluff		2.00
Lunch " " "		1.25
RR. to Sioux City		.15
Room " "		1.00
Sep 9 - Breakfast - West Cafe		1.30
Lunch for noon - Frank's cafe		.25
Carfare Riceville & return		.10
Supper - West Cafe		.50
Room " "		1.00
Sep 10 - Breakfast 5 West Cafe		
RR. to Mrs. Valley		1.52
Mike		.25
Dinner Frank's Cafe (4th day)		.20
Supper Washington Carillon		.20
Street car to Morning side station		10
" to S. Sioux City station		10
Hotel Miller, no money Room		1.50

190

2 day plates, Brown, Glover	1.20
Sep 11 - Hotel Miller - breakfast	1.00
RR. to Co. Bluffs	.43
Carfare to Omaha	.10
Two lunches (noon & supper) Florence	.35
Sep 12. Carfare in Omaha - to Omaha	.10
Carfare to Co. Bluffs	.15
RR. to Mrs. Valley	.43
Miller Hotel - room	.50
Sep 13 " " breakfast	.50
RR. to Logan	.17
Lunch - Helen's restaurant	.25
Team (2. Redenbaugh)	1.00
RR. to Mrs. Valley	.17
Room - Miller	.50
Sep. 14 - Breakfast, "	.50
Team P.E. Robinson	1.50
Dinner 50 supper 50 room 50	1.50
Sep. 15. Breakfast 50, RR. to room 33	.83
2 meals 1.00 RR. to Logan (2) 32	1.32
Labor, Lutes Adams	5.00
RR. to Mrs. Valley	.17
Lodging	.50
25 & 26 Aug. Team morning	1.50
1909 " " Mrs. Guyett	
2 Sep. 15.	

Mefferd - 3 1/2 mi S.E. of
Woodbine - has opened
big sand bank.

Sept 16 Breakfast 50

Telegram to W. & Babcock, Tex. .25

RR to Co. Bluffs .43

Pike .25

RR to Crescent to Mustang .20

Pike .29

Hotel .25

Sept 17 RR to Osage & Train 77 14 .91

Pike - .25

RR to Waiting, Breakfast 30 20 50

Livery Cochran - Waiting 1.50

Dinner - hotel - Waiting .15

Supper " " 25

RR to Cedar Rapids 5.33

Pike - .45

to Iowa City .58

from " .22

7 -	3 -	85
8 -	6 -	305
9 -	8 -	30
	5 -	50
10 -	6 -	395

Culavin is correct

